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ABSTRACT

Designed to help teachers better understand the problems of learning disabled (LD) child, the manual explains the basic causes of LD and presents solutions to problems professionals face in working with this population. The manual contains the following chapters and authors: "The Teacher with a Learning Disabled Child," (P. Ackerman), "The Psychological Assessment of Specific Learning Disabilities in Children," (S. Clements), "Identification of Children with Learning Disability-The Role of the Optometrist," (T. Greenstein), "The Eyes and Learning Disability," (E. Helveston), "The Nurse's Role in Evaluation and Management of Children with Learning Disabilities," (J. Igoe), "A Pediatrician Looks at Learning Disability," (M. Kappelman), "Socioeconomic Deprivation as a Cause of Learning Disability," (P. Marquis), "Learning Disabilities and the Child Psychiatrist," (C. Pfeifer), "Learning Disabilities and the Role of the Psychologist," (A. Riester), "Motor Activity and Learning", (R. Strauss), and "Neurologic Aspects of the Minimal Brain Dysfunction Syndrome Including Learning Disabilities," (K. Swaiman). (DLR)

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A Multidisciplinary Approach to Learning Disability

Handbook For The Classroom Teacher

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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FOREWORD

Learning disability is probably one of the least understood subjects in the medical-educational disciplines. Fortunately this fact, while still true today, is not as true as it was ten years ago. Such expressions as "minimal brain dysfunction," "dyslexia," and "perceptual disorders" are slowly becoming recognized as groups of symptoms embracing various neurological deficits. This recognition, resulting from a clearer understanding of cause and development, is gradually revealing the true nature of the disorder. For example, the concept of "intelligence" is changing from a single measurable entity to a group of cognitive processes — some that can be measured and some that yet cannot. While still useful as a descriptive phrase, the term *minimal brain dysfunction* is almost sure to disappear when the various neurological entities that comprise it become more clearly defined.

By its very nature, learning disability is a *hidden handicap*. It is almost impossible for a *normal* person to conceptualize the difficulty a non-reader suffers. How can a normal reader believe a "NO SMOKING" sign looks like an unrecognizable jumble of strange, slanting lines and curves to a person suffering from severe dyslexia when the dyslexic person seems so healthy and bright in all other respects? It is probably this *hidden* nature of almost all forms of learning defects that has led to a serious omission in the basic training of both teachers and physicians. Neither professional receives sufficient curriculum time to study the fundamentals and basics of learning disability. The elementary school teacher, who should be the educational expert, and the practicing pediatrician, who should be the medical expert, are both frustrated when they are called upon to deal with the learning disabled child; and they usually blame each other for not being any help. However, more multidisciplinary teams are being established; and the future looks bright for increased understanding of learning disabilities.

One of the most important aspects of learning disability is the effect of environmental deprivation on cerebral processing systems. It is known that if an eye is unused for 7-8 years (as happens in untreated crosseye), it becomes truly and irreversibly blind. It is becoming increasingly apparent that if the part of the brain that interprets spoken language does not get enough "experience" — ie, does not receive the proper amount and type of speech at the child's proper developmental age — this particularly important function may suffer. Interpretation of spoken language — instead of being an automatic and effortless function — may become laborious. The child turns off, stops listening and does not learn. The chapter by Marquis illustrates this experience. *This is particularly vexing for teachers because their job is to teach;* and if the child does not learn, the conscientious teacher becomes frustrated.

Poverty alone need not be damaging to child development. Many famous Americans point with pride to their humble origins. But the peculiar circumstances of modern urban poverty in America, with its attendant family disruptions and cultural alienation, seems to be directly antithetical to school performance. Many researchers believe that abnormal micro-anatomical changes are taking place in the auditory processing pathways of the brain as a result of the abnormal language stimulation received by socioeconomically-deprived children. If this is true, it has great significance for the categorization of children with learning disabilities. It means that the "nature versus nurture"

or "heredity versus environment" controversy becomes even less important because, in these cases, nature *is* nurture. Also, to exclude a socioeconomically-deprived child from a category labeled "learning disability" — as is done by recent federal legislation* — is erroneous if the child actually has a structural defect in his brain. A similar type of defect conceivably could be the result of encephalitis, prematurity, or post-natal malnutrition.

As is true in many aspects of medicine and education, when something is poorly understood, theories abound. Because learning disability is such a multi-disciplinary problem, the various theories of its cause and methods of remediation are particularly abundant. Therefore, it becomes the task of the experts to choose those methods that seem plausible and logical and, at the same time, protect children and parents from those theories and methods that may be detrimental — either educationally or economically. In the chapters on vision, each professional has presented his thesis in a positive fashion. Many of the methods and beliefs of optometrists and ophthalmologists will be found. Careful review of their literature reveals certain basic differences. The optometrist feels that certain eye defects can cause (or contribute to causing) learning disability. They also feel that certain eye exercises and/or glasses can cure or alleviate the learning disability, thereby making it easier for the learning disabled child to learn reading, writing, and arithmetic. The optometrist also generally encourages the use of psychological, neurological, and special educational approaches.

The ophthalmologist, on the other hand, feels that he conducts a more complete and relevant examination. He tests with and without medicines that paralyze accomodation (both at far and near distances), and he is perfectly familiar with all the tests that optometrists perform. He has evaluated many of them and feels that they have no relationship to learning disability. Therefore, when he completes his examination and says the condition of the eyes is not contributing to the learning disability, he is not being negativistic. He is simply saying that, in his expert opinion, time spent on eye exercises or prescribing mild magnifying glasses (learning lenses) for children with learning disability will be wasted. Such time can be better utilized using neurologic, psychologic, or most of all, special education approaches.

The chapter by Strauss explains *perceptual motor exercises*, both the theory behind them and the exercises themselves. He presents the view that certain kinds of physical training and physical exercises, if utilized in certain ways, can be useful in helping children with learning disabilities learn to read, write, and do arithmetic. Lehtinen and Kephart are among those who have been in the forefront of this movement.

Some researchers question the value of such an approach, and quite a few articles claim that it is merely the extra attention paid to the child that causes some temporary improvement. This skepticism applies to physical exercises as well as to exercises that purport to train perceptual abilities (eg, Frostig Exercises). Visual perceptual training, visual motor training, perceptual motor exercises and other perceptual training methods are advocated to help learning disabled children. However, criticism, skepticism and disclaimers from many

*P.L. 92-142 — Education for Handicapped Act of 1975. Section 121a, 4 g states in part, "specific learning disability does not include children who have learning problems which are primarily the result of environmental, cultural or economic disadvantages."

professionals have pointed up the need for additional evaluation of this whole approach.

Regardless of how one feels about the theory or practice of perceptual motor exercises, it is impossible to see a group of children involved in the prescribed activities without being impressed by the tremendous appeal it has to the children and by how much fun they are having. Therefore, should it be true that the children are not directly learning to read while they are going through the prescribed games and exercises, at the very least the whole process stimulates enthusiasm for a school activity. Moreover, academic pursuits such as reading, writing and arithmetic can be easily incorporated into these games.

After reading this chapter, the teacher can hold this suggested method of remediation in a proper perspective. It is preferable not to rely on one modality to the exclusion of others. If used in association with direct remedial reading methods, the exercises may act as the "bridge" or "turn on" for a student who can't or won't learn by other methods.

This manual was developed to explain the basic causes of learning disabilities and to share with teachers how other professionals view these problems faced by teachers every day. Of the two chapters on the actual classroom management of the learning disabled child, Ackerman's work is educationally oriented and Strauss' is perceptually oriented. Many other excellent methods for teaching learning disabled children can be found in the appropriate educational literature. The authors hope this manual will help teachers better understand the problems of the learning disabled child in order to make the most intelligent choices among the many proposed methods of remediation and lessen the frustrations in dealing with learning disabled children.

Jerry Newton, MD, Clinical Professor of Pediatrics, University of Texas, Medical School at San Antonio; Director School Health Services, San Antonio Independent School District, Chairman, Task Force on Learning Disabilities, American School Health Association.

Editor's Note:
For the sake of space, one personal pronoun has been used throughout this book, to designate classes of people. The feminine pronoun has been used for the teacher because it reflects the majority of that profession. Likewise, the masculine pronoun has been used in reference to the learning disabled child, reflecting the majority of these students. Naturally, other pronouns could be substituted without harm.

The Teacher with a Learning Disabled Child

Paul Ackerman

Chapter 1

The Teacher with a Learning Disabled Child

Paul Ackerman, PhD, Chief, Educational Planning, White House Conference on Handicapped, Washington, D.C.

When any teacher is faced with the task of educating a learning disabled child, the situation that is presented is described by many teacher's colleges as "challenging." Ask any teacher, however, and the adjective used will more likely be "frustrating."

The situation is probably best described by both words. The teacher is faced with the necessity of teaching a child, the task for which she is trained. For that reason, the situation is challenging. On the other hand, the child does not learn like other children; hence, the situation is frustrating. Usually the teacher is given some advice, diagnostic results, or prescriptions by other professionals (challenging); but on the other hand, the teacher knows that she is almost solely responsible for the improvement of that child and that she must ultimately devise her own educational treatment plan that fits both the child's needs and her own capabilities for teaching (frustrating). She faces the challenging necessity of an in-depth examination of her craft — education — in order to teach this learning disabled child; but she is continually faced with the frustrations of trying to produce a learning environment for a child who has an emotional overlay to his problems — *a built-in resistance to any learning situation.* She can be challenged by the tests which show that the child is capable of learning, but will be frustrated when he does not reach that capability. She will challenge the child's parents to assist her in his educational growth and be frustrated by their demands for faster growth and better services. In short, the teacher will be challenged by the enormous responsibility that is hers in educating a learning disabled child; and she invariably will be frustrated in meeting this responsibility by factors intrinsic to the child, the educational system, the family of the child, and other professionals who are trying to assist her.

There will be more frustration than challenge. She will find that different

professionals have different ideas about the causes and workings of learning disability. The vocabulary used to describe the learning disabled child is vague, ambiguous, or misleading. At best it is unstandardized. Diagnosticians and learning disability "experts" will subscribe to "schools" or systems of thought concerning the cause and treatment of learning disabilities, and those concepts may not fit the training of the teacher. Schools will often be understaffed in providing resources to the teacher with a learning disabled child, and reference libraries may carry obscure or obsolete information on the nature and treatment of the disability.

What can that teacher do? Short of becoming a text book in methods and materials of teaching learning disabled children, this chapter will attempt to present some immediate first steps that any teacher can institute with a learning disabled child. It will attempt to present these steps in the situations in which they might occur in public and private schools in this country.

As a result of new mandates through legislation and the courts, many more learning disabled children will be "mainstreamed" into regular,* ie, non-handicapped classrooms, in the future. Thus, one section of this chapter will deal with the elementary teacher who must educate one or two learning disabled children in her otherwise "normal" class.

Another section of this chapter will deal with the regular elementary teacher with a learning disabled child in her class, but who has the resources of a special room, teachers, and other special education personnel. This administrative situation appears more and more frequently in schools as full programs for all children with special educational problems are developed.

A short section on the special teacher of learning disabled children who works in a self-contained classroom will also be presented. The purpose of this section will be only to show the relationship of this special teacher to the regular teachers and not to reiterate the syllabus of her university preparation for this work.

Finally, this chapter shall present a section on the special condition of the regular secondary teacher with a learning disabled student in her class.

THE ELEMENTARY TEACHER WITH THE MAINSTREAMED LEARNING DISABLED CHILD

When a learning disabled child is mainstreamed into a regular classroom, there are some immediate psychological aspects to this event that must be dealt with by the teacher. In fact, psychological "first aid" is the most important activity a teacher can engage in when a learning disabled child is first moved to or discovered in her class.

There are several reasons why the teacher must immediately examine both the psychological climate of her classroom and the learning disabled child who is entering the classroom. The first reason is to avoid failure. In all probability, the child has had a learning disability most of his life. All through his childhood, he has seen his friends and family accomplish things that he has not been able to do. He has failed in so many things that he is wary of trying many new tasks, like reading and writing, especially when he is observed by the

*The adjective "regular" shall be used to describe (1) a student population in a classroom that is primarily non-handicapped and (2) the teacher of a primarily non-handicapped class.

whole class. So he must be helped to trust that his classmates will not ridicule him if he fails again, and encouraged in his continuing effort.

Secondly, his classmates will soon note that he does not learn as they do — that he has special, peculiar problems. They cannot understand those problems and will probably explain them with the generic concept used so frequently by elementary aged children, "Oh, he's just dumb." The fact that the teacher knows that the learning disabled child is *not* dumb must be made known to the class and the real facts substituted. If not, the learning disabled child may accept his intrinsic "dumbness" and lower his motivation to try.

The third factor the teacher will discover in her talks with the learning disabled child is his overwhelming pessimism. He has tried and failed many times. He *does* think himself different from others in negative ways. It *is* difficult to start a new task and risk failure. It *can be* difficult to make friends. The teacher must be ready to deal with these statements matter of factly, adding some optimism when it is possible, and seek to turn the statements into learning tasks and *recognize the reality* of the feelings. She cannot, however, share his pessimism or its complement, lowered motivation.

Finally, the teacher may find that the learning disabled child often acts impulsively, is often agitated, and is awkward. The child may, in fact, be the most active child in the classroom, bothering other children and the teacher as well. The teacher must then minimize these distractions, being careful not to reward them with overconcern or overattention.

The teacher must administer psychological "first aid" to the child by working out a role of "low visibility" for that child within the classroom — that is, a role centered on work that is not being constantly seen by his classmates; a role that allows the child maximum success at whatever tasks he is asked to perform (whether academic or social), and a role that fosters the understanding and acceptance of the child by his classmates.

If the teacher has particularly good rapport with her students, perhaps some explanation of the learning disabled child's problems might help in the acceptance of the child. Such a tactic should be used only when the teacher is quite certain that it will have the desired effect. Otherwise, the danger of pointing out the learning disabled child's "differentness" will increase his distance from the other students.

Since it is likely that the learning disabled child will also be quite active, a role within the class that stresses physical activity can be useful. This has the advantage of allowing some success as well as allowing the child to release his energy. Someone has to carry balls to the playground, dust the erasers, clean the boards, water the plants, et cetera.

The purpose of mainstreaming the learning disabled child into the regular class is to positively integrate him with his age group. That is the first task of the teacher when she knows that a learning disabled child is in that class. Once this acceptance of the child by his peers or the acceptance of the child by himself occurs, the barriers to learning are reduced. The child does not have to spend such a great deal of time fighting the battles of failure and exposure to his classmates. *Then and only then* can his education progress.

But what is "education" to the mainstreamed learning disabled child? It is the individualized teaching of concepts and skills that will help the child obtain a significantly higher level of performance, both academically and socially, than he would obtain in a class without any special attention. Almost every learning disabled child in a regular classroom needs special provisions and special planning. This cannot be ignored.

The regular teacher's task is to map out that specialized "education" and administer it. To do this adequately, the teacher will be required to devote more time and attention at the outset to the learning disabled child than a non-handicapped child would require. If a satisfactory plan can be derived from this effort, however, the teacher will find it a worthy expenditure of time and thought.

The teacher's best friend in developing the educational plan is a notebook. She should expect to devote many pages to her learning disabled child. She will be gathering information from many sources, and she will be writing her impressions, not only of that information, but her own observations of the child as well. She may elect to take notes in a diary form, or she may organize them in an outline. Regardless of the form of the notes, however, she will be asking the following questions of her informational sources:

What is this child's true capacity for learning? The first source for the teacher asking this question would be the school psychologist or psychometrist. When testing is completed, the teacher should ask for an interpretation of all test scores. She should be able to talk to the testor and ask for translations of the scores into school terms, like "Does that score in visual-perceptual tasks have a bearing on his problems in reading, and, if so, which ones?" But the teacher also needs to question the limits of learning in informal ways. She should try to get a history of his school career from other teachers. She should seek anecdotes that tell her what some of his most extraordinary successes were. She should quietly watch him at play to find out how he learns the things he wants to, such as the rules in childrens' games. She should have sufficient information about the limits of his abilities.

What have his most notable failures and successes been in previous educational experiences? The purpose of inquiry into previous successes and failures is to help motivate the child for future learning. Obviously a knowledge of his successes will help a teacher plan a positive program that will motivate him for success. A history of his failures will allow a teacher to avoid those situations which she knows will result in yet another brick in his wall of pessimism. To obtain this information, the teacher will again have to question other teachers and professionals. The teacher should ask for specific examples rather than interpretations. She should ask to see examples of work whenever possible, and should examine grades and comments on report cards. She should remember that it will be easy to obtain information about the child's failures; his successes may be less noted.

What do we do in my class that fits the successes and failures categories of the past? This inquiry leads the teacher into a dissection of the educational tasks she sets up in her own classroom. She must ask herself the questions: "What do I want my class

to learn this year?" "Why do I want them to learn this?" and "Which of these teaching methods could work best with my learning disabled child?" If the answer to this last question is "few" or "none," then the teacher must re-examine those teaching methods to find alternate ways of presenting the material that fits into the learning plan of the child.

What do the professionals tell me I should do for this child? It is likely that the teacher will have received some sort of a professional opinion on the child from either the school psychologist or the pediatrician, but the teacher should re-examine that professional advice in light of what can be possible in her classroom. Did the doctor suggest that isolation techniques be used to control activity? The teacher needs to ask exactly what that means. "Isolation from whom or what? At what times of the school day? How isolated? Isolated in reaction to overactivity or routinely? How will I know isolation is working?" These are the types of questions that may need explanaton. Because there are many different ideas about how to treat learning disabled children, the teacher should only consider this clarification as input to her planning — *not as gospel.*

What do the learning disabled child's parents and family feel about his strengths and weaknesses? The child's family knows him better than anyone else, but they are often the last to be consulted about the child. The knowledgeable teacher should make an immediate appointment with the child's parents and simply ask them to talk about the problems as they see them. Then the teacher should ask them questions about their plans for the child's future, their assessment of his potential, and about his most notable successes.

Again, the teacher is trying to identify the child's strengths. When that notebook begins to fill, the teacher will begin to see patterns in the behavior and the successes of the child — patterns which she must then translate into an Educational Plan. This Educational Plan, individualized and personalized to the child, then becomes the guide to his progress and the tool for cooperation among all those professionals and parents who want to help the learning disabled child recognize his natural potential.

THE EDUCATIONAL PLAN

There are probably as many definitions and formats for educational plans as there are educational authors. Thus the format for the plan listed in this chapter is a suggestion only. However, it appears to cover most of the points found in other formats. Its components are as follows.

Output

The teacher should pick a date — a reasonable length of time in which she hopes to accomplish some educational goals. That date should become an end point. The teacher should then write a narrative description of how the child should be functioning at that date. She should visualize that child functioning successfully in a school and describe that goal on paper. She should be positive and talk about his achievements in social as well as academic pursuits.

Example: "On January 1, Christopher will come to school in the morning with clean pants and shirt, signifying that he feels better about himself and wants to project a more acceptable image. In the reading session, Christopher will be able to listen to the other children read, and he will be able to correctly repeat the

story of Rick and Janis after it is completed. He will then be able to identify 10 out of 15 words in the Dotz Primary reading list, grade 1, administered by another student via flashcards. He will eat in the school cafeteria and sit at the same table with his class, inconspicuous to the cafeteria monitor because of his courteous manners. In the afternoon, Chris will be able to complete his usual mathematics group without causing a fight and will remain strongly in the upper second grade in calculations. At recess, he will go to his room duties without protest and dust the erasers without making an eight-year-old white headed. After school he will walk directly home."

Content

Now that the teacher has set a date, she can think about the content and skills her learning disabled child will have to master. Again, she should think both socially and academically. Here is her shorthand;

Example: By January 1

Reading: Listening skills, Grade 1.5 (emphasis on comprehension and verbatim reporting).

Vocabulary: Visual discrimination task (words) on Dotz primary words, first 15.

Arithmetic: Mental calculations, Grade 2.5 (lesson 15, Drake book). Use of pocket calculator for addition and subtraction.

Social: Better self-esteem as measured by *Plantek Smiles Test* and Better Grooming Habits. Noted weekly ability to work for an hour at a time under supervision without causing dissension among peers! Walks home after school without being distracted and detoured.

Methods

In this section, the teacher attempts to list some methods for obtaining the social and academic levels she projects in the Content section. It is in this section that her best judgment as to appropriate learning styles may be utilized to plan the alternatives for attaining the content. Note in the partial example that follows that she gives herself at least two alternatives for each content area that she wishes to follow.

Listening Skills (comprehension)

a. Daily report at Share-and-Tell time for Chris' family happening. (High status) Question him about conversations in family.

b. Ask Chris to be reported in Bluebird reading group.

c. Work with listening tapes, individual, green set.

Self Esteem

a. Class make up stories with victorious hero named Chris as part of general activity.

b. Reward table for special activities and reward for Chris' improved dressing.

c. Special assignment of class duty with large button to wear marked "Duty Officer."

d. Class discussion of self and self-esteem (without focusing on Chris).

Resources

In this section, the many materials, tests, and personnel needed to effect this growth are listed. This section can serve to remind the teacher of the preparation she will have to do and the reading that must be accomplished to fill in the gaps in knowledge about the learning disabled child.

Listening Skills (comprehensive)

a. SUR Reading Comprehension Tapes (listening) green set.

b. Tape recorder and individual earphones, portable listening booth.

c. Monograph, *American Speech &*

Listening Journal,) ly 1974, "Developing Comprehension Skills in Atypical Children."

Self Esteem

a. Reward Table (card table from home) with approximately 50 small toys and candies.

b. Poster identifying same.

c. Class Duty Office name tag with blue ribbon.

d. *Plantek Smiles Test Manual.*

e. Rose's Text on *Childhood Self Esteem,* Acme, 1975.

Fall-Back Position

This section answers the inevitable question "But what if those methods do not appear to be effective?" This fall-back section must think out this question in advance and plan alternatives if, indeed, the methods do not appear viable. This section is the "feedback" section — the guarantee that what is being done is continuously examined and changed when necessary. A partial example follows.

Listening Skills (comprehension)

If the group comprehension activities do not appear to be effective, then activity needs to concentrate mainly on the acquisition of skills through individual sessions, probably using a tape recorder. If the classroom appears too noisy or distracting for the individual activity of tape-recorded listening comprehension drills, then private tutoring in the home during school hours is recommended.

Self Esteem

If Self-Esteem Activities are too abstract or appear not to be effective, will request private consultation with school social worker and school psychologist to work out details for individual therapy sessions, seeking better self esteem.

Naturally, the development of the Educational Plan is a major conceptual task of the teacher; and its importance cannot be over estimated. However, its implementation will be less effective if it is not shared with the parents and other professionals who work with the learning disabled child. When it is shared (and perhaps modified), it then becomes a contract with those others which assures that: (1) all are working toward the same goals, (2) all know what the teacher is doing and can support her, and (3) all persons surrounding the learning disabled child can observe progress made by the child in the areas delineated by the teacher. The Educational Plan becomes an educational philosophy between the teacher, child, parents, and all other professionals responsible for the child's progress.

Eventually, the ideal Educational Plan for a learning disabled child will cover long-term as well as short-term outputs. Early thinking about the vocational possibilities for a learning disabled child, for instance, should start before the child reaches the secondary school but should also be part of his Educational Plan throughout high school. But for the elementary teacher who has just discovered the learning disabled youngster in her class, the short-term plan is necessary to get the child and teacher started. Once the teacher is more certain of the child's strengths and weaknesses, she will feel more confident in long-term plans.

Where does the teacher with few professional resources seek further help in educational planning for the learning disabled child? She can contact any special education departments she can find. If the local school does not have an adequate department, she can usually write the State Director of Special Educa-

tion, c/o State Department of Education, the State Capital, for further information or the names of professionals in education in the area. But there are other resources as well. Most colleges of education have a curriculum library where most of the latest material is available. A perusal at this center can provide many helpful hints to the teacher with the mainstreamed learning disabled child in her class.

For a computerized printout on research information available on various aspects of the learning disabled child, the teacher is referred to the Eductional Research Information Center (ERIC) in Special Education at the Council for Exceptional Children, 1920 Association Drive, Reston, VA 22091. A telephone call to ERIC's information officer (703-620-3660) will produce the same information at a faster rate.

The Federal government has also established demonstration centers for the education of learning disabled children throughout the United States. These centers exist to help others establish effective centers, and a list of these centers can be obtained by writing the Coordinator, Learning Disability Centers, Program Development Branch, Bureau of Education for the Handicapped, U.S. Office of Education, 400 Maryland Avenue SW, Washington DC 20202.

Finally, college or technical bookstores will provide a good source of information. As a result of much concern about learning disabled children in the last few years, many books have been written about diagnosis and education. Because there are many fine books now available, no one will be singled out as exemplary. However, due to the varying levels of technical jargon often found in these books, it is wise to examine several books before purchasing. While it is important to understand any book; it is *vital* to understand a book that is guiding the education of a learning disabled child.

THE ELEMENTARY TEACHER WITH RESOURCE HELP

One of the most common ways of educating learning disabled children of this age is through mainstreaming the child whose teacher has a resource person and a resource room available to her. How does this teacher differ from the teacher without such help? To many regular classroom teachers, it is the difference between meeting the challenge or succumbing to frustration. The resource teacher is a specialist in educating learning disabled children and knows many of the methods and materials with which to accomplish that task. The resource teacher probably already will have identified the child and sought help from other professionals who will test the child, examine him medically, and provide for his ancillary treatments. The resource teacher thus acts as a professional guide to that regular teacher in transmitting and interpreting this information. Instead of gathering bits of information through the Sherlock Holmes methods of the teacher described in the preceding section, the regular teacher has a person who has done this task, who knows the child's history, and who has carefully and systematically sought out the child's strengths and weaknesses.

Sounds ideal? It is proving to be an effective and useful way of working with the learning disabled child. When the child's weaknesses are identified, then the child may leave the regular classroom for instruction

in the resource room and avoid the embarrassment of a different level of instruction in front of his classmates. If the child needs to use special materials in the regular classroom, the regular teacher can obtain them from the resource teacher. The resource teacher also takes on much of the responsibility for the continual assessment of the child's progress.

But there are major similarities between the teacher *with* resource help and the teacher *without* resource help that need to be clarified:

The *regular teacher* is still responsible for the educational growth of the child. This means that the education of the child in school must be tailored to the classroom situation of the *regular* teacher, not the resource teacher. It is the regular teacher who has the child most of the day. It is the regular classroom which contains the learning disabled child's friends and classmates. It is usually the regular teacher who has more responsibility for the social growth and integration of the learning disabled child than does the resource teacher. In the hierarchy of importance to the learning disabled child, the regular teacher must come first; and the resource teacher must be seen only as the helper of the regular teacher — the professional who advises her.

The regular teacher must be the focal point between the parents, the child, and the other professionals represented by the resource teacher. Parents instinctively talk to regular teachers as their first line of communication. The child will trust the regular teacher because he has had more experience with her. The resource teacher can only emphasize his differences. The regular teacher must finally decide on the over-all educational plan for any learning disabled child — a plan based on her competencies, her classroom climate, and her obligations to the child, the school, and the parents.

Finally the regular teacher, like the teacher described in the preceding section, must devise an Educational Plan for that child. Any paper which delineates goals and methods denotes a philosophy of education that should be shared and coordinated among all those who work with the learning disabled child. The regular teacher with resource help is fortunate to have such help with such an Educational Plan, but that does not relieve her of the responsibility for seeing that such a plan is procured and that it fits her teaching style and philosophy. The regular teacher with resource help is advised to develop the Educational Plan described in the preceding section on which to base her educational program. The only difference from the Plan described previously is that it may now contain options for special teaching and resource help that would not have previsouly existed.

SPECIAL CLASS TEACHER

As stated before, this section will not contain the whys and wherefores of how to educate children with serious learning disabilities. It will, instead, attempt to list some of the special teacher's responsibilities to the other regular teachers of the school.

Sooner or later, the learning disabled child *must* be placed in a non-handicapped, regular classroom. That means that the special teacher constantly must be concerned with preparing the learning disabled child for his integration into the mainstream of the school — a difficult social task at best. Because a child can only experience social success when he is in social situations, the special teacher frequently will ask

teachers to accept the learning disabled child into their classes' social activities for short periods. The child must have successful socializing experiences; and therefore, it is the responsibility of the special class teacher to know the academic levels that a child will be expected to obtain in a regular classroom and to help the child and the new teacher prepare for each other. Careful preparation and understanding will reduce the possibility of the child experiencing continued failure.

The philosophy of teaching learning disabled children requires the special class teacher to function more as a resource person than a teacher. It is her job to be the advocate for the learning disabled child and ensure the successful integration of the child into the mainstream. She has a public education job. She has a socializing job. She has an advocate's job. And, above all, she must be an effective teacher.

THE SECONDARY TEACHER WITH A LEARNING DISABLED STUDENT

Because of the present state of the art in learning disability education, the secondary schools have, on the whole, been the last to add special services or personnel who are expert in teaching learning disabled children. Thus, many secondary school teachers finding themselves with learning disabled students are constrained to teach their subject matter to youths with spotty and erratic educational skills. These teachers rarely have the professional resources they need, and they are aware that their students resent the school and the educational system because it has not proven successful to them. What can they do?

Short of unified action to obtain needed personnel, there is little that can be done aside from developing the Educational Plan and adapting it to the requirements of the subject matter that must be taught. This plan requires that the teacher carefully examine her subject, identify the salient points to be taught, and re-define her teaching methods to accommodate those strengths and weaknesses she has been able to glean from past records and observations.

But the secondary teacher must also be aware of the student's extracurricular needs. The secondary student generally has had a long history of failure as well as other social problems. Usually he has not solved them by the time he enters the secondary school and needs additional help. The secondary counselor should be made aware of the student and his problems and provide social counseling when necessary.

The total program for this student will be a combination of academic skills and a form of "modified psycho-therapy" carried on by the teacher and the counselor. This "modified psycho-therapy" does not in any way resemble what occurs in a psychologist's or psychiatrist's office, but instead attempts to seek any and all legitimate rewards available to a student and allows him to earn them. Any academic task that he is required to perform should, as much as possible, have a built-in guarantee for success.

The student also needs, but will often be unable to obtain, help in the area of vocational counseling. Unlike other students, the secondary student with learning disabilities has unique problems in seeking a vocation (or further education) upon graduation from high school. Again, the vocational counselor should be alerted to the problem and obtain available information pertaining to

vocational opportunities for learning disabled youth. One collection of such information is being published by the Association for Children with Learning Disabilities, 5225 Grace Street, Pittsburgh, PA 15236.

Yet the fundamental teaching problem for the regular secondary teacher remains how can she teach subject matter to a student with definite learning disabilities? That teacher will have to look at alternate methods and materials to fit his plan.

Although in its infancy, the federal program of demonstration grants in learning disability has developed and catalogued alternative methods and materials for the presentation of different subject matters. This information is free and may be obtained (1) by writing the coordinator of those programs at the address given previously or (2) by writing to an agency which offers assistance to all those federal projects. An inquiry to The National Learning Disabilities Assistance Project, The Network, The Manufactory, Merrimac, MA 01860, Phone (toll free) 800-225-0686, about alternative teaching methods to secondary school subjects should provide the results of many of these demonstration projects. Also, the previously-mentioned ERIC clearinghouse may be able to provide helpful information (at a slight cost).

The problems facing any teacher of learning disabled children will only increase as the schools become more aware of the needs of these students and their responsibilities to them. For this reason, each teacher must prepare herself for more effective teaching and for the position of advocacy for the learning disabled child that will be her task. This advocacy will have to include not only better learning situations for learning disabled students, but more nurturing social situations as well. Some teachers will receive professional help as they work with learning disabled students. They will be challenged. Some will have to manage on their own. They will face frustrations. But manage they will if they carefully, systematically and objectively prepare a careful Educational Plan for each learning disabled child and share that plan with the other professionals involved. Only if teachers examine the needs of the child, their capacities to fulfill these needs, and the resources available to them will they be able to adequately balance the educational and social environment of the child. That balance is essential for the child's intellectual and emotional growth.

The Psychological Assessment of Specific Learning Disabilities in Children

Sam D. Clements

The Psychological Assessment of Specific Learning Disabilities in Children

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In general terms, the clinical and/or school psychologist is primarily involved in the assessment and modification of individual differences. The tools and techiques utilized by the psychologist sample cognitive, motor, sensory, language, and social behaviors. These segments — when analyzed, interpreted, and then recast in perspective with all other available information relating to the individual child and his unique situation — form the essence of the psychological assessment. Psychological assessment can contribute a profile of functioning indicative of an individual's current abilities which may then be compared with others of his age. A survey of the pass/fail record, a description of the child's approach to tasks, particular problem-solving style, and idiosyncrasies in central (brain) processing functions will offer valuable information as to the nature and extent of a specific disability. Such information is essential in diagnosis and treatment planning for children with specific learning disabilities.

The number and kind of assessment techniques available to the psychologist are many and varied. Some are shared with colleagues in other disciplines — particularly education, language pathology, pediatrics, and child psychiatry. *The search for a single or standardized psychological assessment package specific to children with suspected learning disabilities has generally been unproductive.* This is the result of the varying nature of the disorder, as well as the diverse symptoms in different children at different ages. The selection of appropriate tests is determined through a reasoning process on the part of the psychologist, taking into account such factors as the age of the child, the chief complaints, the major symptoms,

data available from other sources, and treatment and service possibilities available in the local communtiy.

Many large school systems have developed standardized "batteries" of tests for diagnosis of children with specific learning disabilities. This type of approach is basically unscientific. It suggests a diagnosis before the evaluation has been done, and each child with a learning disability is unique. The reasoning process previously mentioned is absolutely essential before one can intelligently choose the appropriate tests for the individual child, and this important concept needs to be stressed. Attempts have been made to develop "screening tests" for children with learning disability and other developmental disabilities. Such an approach is not only unscientific, it is impossible.

Among the procedures basic to the psychological assessment are:

1. An individual appraisal of general intelligence
2. A current inventory of basic academic skill levels (reading, spelling, handwriting, mathematics)
3. Measures of certain specific central processing functions
4. Behavioral descriptions
5. Additional indices of language, learning and behaviors as indicated for the individual child.

Perhaps the major assurance that parents, teachers, and educational program directors require from the psychological assessment is confirmation that the general intellectual functioning level of the child is near or within the average range and that the capacity or potential for higher achievement is possible despite past or present performance. Another element which teachers in particular wish covered in clinical assessment is the isolation of areas of impaired functioning which may lend themselves to specific training methods or remedial techniques.

Since the definitions for specific learning disabilities state the child must possess "near average, average, or above average general intelligence," an *individual* appraisal of intellectual functioning is the cornerstone of the psychological assessment.

Children with specific learning disabilities tend to do very poorly on group-administered measures of intelligence, and it is an injustice to document the mental capacity of children in this manner. It is equally unjust to take at face value the child's academic skill scores as indicated by the group-administered achievement tests generally given in school systems. The most obvious reason for the low scores of learning disabled children is that group tests usually require that the child be able to decode (read) correctly the test questions in the booklet. Since reading skills are commonly impaired in such children, they are at great disadvantage because there is no way to credit them for the knowledge they possess unless they are able to read the test questions. In addition, an anxious and excited classroom atmosphere at group test time can distract a child with specific learning disabilities if hyperactivity and short attention span are major symptoms. Such reactions can be better controlled in an individual, one-to-one testing situation.

There are three sub-groups of children within the specific learning disabilities category which the psychologist (and other members of the diagnostic team) will encounter during diagnostic evaluation. For descriptive convenience, these can be referred to as:

Type I - The Hyperkinetic Group
Type II - The "Pure" Learning Disabilities Group
Type III - The Mixed Group

Each sub-group of children will have a different cluster of deficits and strengths; each will have a different developmental history; each will be responded to differently by adults and peers; and each will require different treatment. Of great importance to the clinician, each of the three types exhibits certain characteristic behavior during the diagnostic evaluation.

TYPE I
THE HYPERKINETIC GROUP

1. High Verbal I.Q. with relatively low Performance IQ
2. Hyperactive, fidgety, restless
3. Poor fine motor coordination, clumsy
4. Deficits in visual processing:
   a. poor visual discrimination
   b. poor visual sequencing
   c. poor spatial relationships
5. Easily distracted by noise, movement, and/or own thoughts
6. May talk impulsively, relating unsolicited information about himself, his family, his school
7. Quick loss of attentional focus to tasks
8. Quick mental fatigue for sustained performance tasks
9. Gives up easily on performance tasks
10. Appears socially immature for age

TYPE II
THE "PURE" LEARNING DISABILITIES GROUP

1. High Performance I.Q. with relatively low Verbal IQ
2. Severe reading and spelling disorders
3. Tends to be quiet and attentive to examiner and tasks
4. Slow response time to questions or instructions
5. Slow pace of thinking
6. Slow pace of verbal expression
7. Difficulty in precise verbal expression; searches for right word or phrase
8. Often cannot think of right word or phrase and will substitute or describe instead
9. Easygoing and cooperative
10. Processes verbal directions slowly and examiner may have to repeat several times
11. Has difficulty retaining a series of verbal instructions or directions
12. Good hand/eye coordination; smooth motor movements
13. Organized approach to performance tasks
14. May quietly "talk" himself through tasks as an organizational technique and cognitive reinforcer

TYPE III
THE MIXED GROUP

1. "Scatter" pattern on individual intelligence test, with final Verbal and Performance I.Q. scores nearly equal but with wide variation in achievement within both scales
2. Animated, cooperative child
3. Mild to moderate hyperactivity
4. Poor ability to pay attention
5. Poor organization of task components
6. Easily distracted
7. May require occasional repeating of instructions

In all three types, these behaviors are equally present in all activities in which the child engages, at home as well as at school. The symptom or behavior may be more noticeable at school because of the greater demands placed on the child. It is also well to keep in mind that, in many cases, there is a moderate amount of overlap between groups so that exact categorization may be difficult.

No concern should have higher national priority than that of providing the fullest opportunity for the physical and intellectual development for every child. For those children handicapped because of specific learning disabilities, the availability of these special resources is very limited.

In every 100 school children, there are 5 to 10 who, despite good intelligence, have a specific learning disability and/or hyperactivity and other neurodevelopmental irregularities of sufficient severity to require special help. These children need interdisciplinary team assistance to reduce or remedy their disabilities and inefficiencies in learning.

Identification of Children With Learning Disability
The Role of the Optometrist

Tole N. Greenstein

Identification of Children with Learning Disability The Role of the Optometrist

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There are today a large number of school children who have learning problems, most of whom seem to have one thing in common — an inability to respond to the standard reading instruction presented in our schools in spite of normal or better intellectual capacity. A plethora of diagnostic and remedial approaches has been developed by various disciplines in an attempt to solve this problem. That they have all fallen short of their goal is agreed upon by all experts.

Children who do not learn to read well encounter even greater difficulty when they reach a point where they have to read to learn. In addition to a reading problem, such children begin to manifest problems in every subject area in which reading is the tool necessary for gaining knowledge.

Two questions must be asked: (1) What are the specific kinds of vision problems that interfere with ability to read? and (2) How can such problems be identified so that proper intervention can be brought into play early? Let us explore some answers to these questions.

Basically, all vision problems can be placed in two categories.[1] Children with problems in the *developing* vision system invariably have difficulty learning how to read. These problems can be detected by an evaluation of vision development before the child begins school. Children with problems in the *developed* vision system are generally able to read, but have difficulty understanding what they read. Their reading actually does not really become efficient. Problems in the developed vision system can be detected by routine vision tests, but only if the visual system is viewed as an information processing system. If one looks only at visual acuity and refractive measures, the problem is likely to remain undetected.

This chapter will limit itself to a discussion of the identification of children with problems in the *developing* vision system and their interference with the ability to learn to read. Vision consultants to a number of school systems have found that approximately 20% of all entering school children have a problem with vision. This means that out of a class of 25 students, there

will be at least 5 children with vision development problems.

Let us examine those vision skills that appear to be essential for "learning to read."[2] These can be thought of as PREceptual skills — that is, they must be present as a foundation from which perceptual skills can evolve. Some of these skills include the following:

Ocular pursuits or eye following skills. This is the ability to move one's eyes smoothly, accurately and effortlessly in tandem, whether following a line of print in a book or the flight of a ball through the air.

Saccadic fixations or eye jumping skills. This is the ability to direct one's eyes in a saccade or jump-like fashion from one point in space to another with accuracy and a minimum expenditure of effort. Both eyes should arrive at the place of fixation at the same time.

Near-to-far and far-to-near fixation skills. This is the ability to shift the fixation of both eyes accurately from a near object to a far one or vice-versa (eg, from desk to chalkboard or from chalkboard to desk).

Convergence or eye aiming skills. This is the ability to turn or converge both eyes toward each other in order to look at a near object. This ability needs to be performed with accuracy as well as with minimal effort and should be sustained long enough to acquire the desired information from the fixated object.

Accomodation or eye focusing skills. This is the ability to adjust both eyes so that they can aim *and* focus together at the same time at the same place. Sustaining this binocular performance over time becomes critically important during the act of reading. This skill is not guaranteed because the child has two eyes!

Even possession of these basic vision skills does not mean the child is immune to a visually-related learning problem. It is one thing to possess such skills, but it is quite another to be able to integrate them successfully within the entire central nervous system.

The child with vision problems that affect his ability to learn may display behavioral symptoms that the teacher and/or parent must be able to identify and interpret correctly; otherwise, it becomes too easy to describe the child's behavior and then accept the description as the problem. A very common example is the child who has continual difficulty paying attention. Too often, the teacher observing this behavior translates it on the child's report card with the remark, "Charlie could do better if he would only learn to pay attention." It becomes a generalization that "paying attention" is something that anyone can do if he tries, and that Charlie simply chooses not to do so.

This same symptom, when viewed visually, can be seen as an inability to fixate. As Dr. William Ludlam [3] has pointed out, when someone says "pay attention," what is really meant is "Fixate me." Children with vision development problems are often unable to fixate visually for more than a brief moment or two without looking away. Instead of admonishments about not paying attention, such a child should be sent to an appropriate vision specialist for evaluation and treatment of an obvious vision problem. When the child is assisted in developing the ability to fixate accurately, he will be able to pay attention better; and this usually leads to improved performance in all areas of learning. What then, are some symptoms of vision development problems?

Movement Problems

Since the eyes guide the actions of most people, a vision problem decreases performance and understanding. A child with this problem will usually be more awkward and clumsy than other children his age. He will often "flunk playground," and he will typically require an abnormal amount of band-aides. Gesell described it nicely when he wrote, "The correlation of visual functions of posture, locomotion, and manipulation is particularly significant . . . Visual defects and deviations express themselves not so much in failures of acuity as in discoordinations, various forms of awkwardness, faulty timing and hesitations. Closely observed, these atypical preschool behavior patterns have significance for early diagnosis, prevention, and treatment of visual difficulties."[4]

Attention Problems

A child with vision development problems will have difficulty staying on a task long enough to complete it, particularly a *near* task. This is typical of the child with poor ocular fixation who is constantly shifting his fixation erratically from one thing to another. Often such a child cannot fixate his body any better than his eyes and is described as "hyperactive." Paradoxically, this child often sits and watches television by the hour without excessive movement. The television is across the room; and although the picture changes continually, there is no demand made for shifts of fixation or eye movements. In addition, this same child may be able to perform adequately on those near tasks that allow him to use his hands, such as puzzles. It is only when he is presented with a *near* task demanding visual concentration alone that he begins having difficulty sustaining attention.

Copying Problems

The child with vision development problems will be extremely slow to complete a copying task from the board; and when completed, the copying will contain many errors. This is intimately associated with inadequate near-to-far and far-to-near fixation skills. Properly observed, such children can be seen to indulge in excessive head and eye movement during copying tasks. Each time they look up at the board, they make excessive visual searching movements until they find the correct place. Often the task is far from completion when the teacher begins to erase the board.

Paper and Pencil Task Problems

Getman once stated that "handwriting is the visual control of direction."[5] In the absence of such control, the teacher or parent may observe the child having (1) difficulty making lines meet when making forms, (2) difficulty staying on the line when writing and/or (3) difficulty staying within the lines when coloring. Papers will look sloppy and have many erasures in attempts to make the work look as it should. In some cases, the paper will be rotated (often 90 degrees) so that the writing is done vertically rather than horizontally. Occasionally, such a child will keep his paper in the normal position and twist his body instead.

Reversal Problems

Letter and number reversals may occur through the first grades, as well as reversals in reading. There are a number of theories relating such behavior to minimal brain dysfunction. Astute observation can frequently relate this behavior to inadequate ocular fixations. If the

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child cannot make controlled saccades and instead fixates erratically, he will be unable to acquire the information in its proper sequence. This interruption in the flow of information leads to difficulty interpreting the ideas; and it is therefore not surprising to hear the child read "sacred God" instead of "scared dog."

Reading Problems

A variety of performance problems become obvious in the presence of inadequate ocular pursuits and fixations. Among these are loss of place while reading, use of finger or marker to help keep the place, rereading and/or skipping lines without being aware of it, miscalling the beginning or ending of words, difficulty retaining newly-learned words (even when they appear further down on the same page), skipping words frequently, and reading in a one-word-at-a-time fashion. A child with these problems may also have difficulty discriminating between words that are similar in appearance.

Talking Problems

Because he is unable to use vision effectively for information processing, such a youngster will be highly verbal. In the early grades, he often appears to be functioning well in reading; but what he is actually doing is memorizing, which is not difficult for a child since first and second grade material lends itself easily to such an approach. He is so good at bluffing that his reading inadequacies may go undetected until late in the second grade or early in the third grade. At that time, the emphasis shifts from one of learning to read to one of learning to learn. Since he is unable to cope on this level, his performance drops drastically, as do his grades. This type of child may be described as an "early fader." His real problem is an ocular motor dysfunction.

Posture Problems

Gross postural deviations at all desk activities are a common observation in vision development problems.[6] The child may tilt his head to one side during near work. This is frequently accompanied by placement of the task completely to one side of the midline. There is often excessive movement of the head back and forth like a typewriter while reading. Reading material may be held closer than normal, and the head may get quite close to the task during writing.

Behavior Problems

This child may report frequent morning tummy-aches. He may experience mysterious allergy-like symptoms resulting in frequent visits to the family physician but rarely in any definitive diagnosis. He may begin to bother other children rather than doing his own work. Eventually, he may develop a poor self image and often refuse help.

The teacher who is alert to these symptoms or indicators of classroom vision problems[7] can advise the child's parents of these observations and their implications. When this is followed up with a vision analysis conducted by an informed professional who goes beyond a mere determination of eye health, eye sight and refractive status,[8] the child is more likely to receive the help he needs. A parent or teacher can determine the professional's interest by asking:

1. Does the professional make tests at the near seeing distance?
2. Does he test for visual-perceptual-motor performance?
3. Does he provide visual training

or will he refer to a colleague who does?

4. Will he report to the teacher, either orally or in writing, the child's visual status and make suggestions concerning how the teacher may help the child in his vision development and his visual learning?

A positive response to these questions gives assurance that the professional understands the relationship between visual performance and academic achievement. Such a professional [9] will conduct the kind of diagnostic examination that will reveal vision development problems that are often present even when the child has excellent distance acuity.

WHAT CAN THE TEACHER DO

1. When the child has difficulty keeping his place, supply him with a marker or show him how to use his finger. This reduces the amount of effort expended by his "limping eyeballs" in continually hunting for the correct place.

2. Limit the time you keep the child working on sustained near vision tasks. End the task before he quits himself.

3. Provide relief from confined near tasks requiring small muscle movement and chalkboard work requiring large muscle use.

4. When putting copy work on the chalkboard, supply such a child with a copy at his desk.

5. Don't assign tasks in which the child is unlikely to succeed. For example, it would be unwise to use flash cards with a child who demonstrates poor ocular fixations.

6. Recognize that continued repetition of a task with which the child has repeated difficulty will result in more stress and further lowering of his self-esteem.

7. Evaluate a child's performance in terms of *his* abilities as they are — not as you would like them to be or what you expect from the other children.

The undetected vision development problem is responsible for a great number of learning problems. When the problems are properly identified, a majority of these children can be treated. The informed teacher can play a significant role in the identification and subsequent referral of these children for special care, and such interprofessional teamwork can reduce the alarming number of vision development problems.

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The Eyes and Learning Disability

Eugene M. Helvesten

Chapter 4

The Eyes and Learning Disability

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The eyes are an essential intermediary between the printed pages upon which are assembled the history and aspirations of our civilization and the human brain which is the most magnificent, complex, and unique decoder that has ever been created. How significant is the intermediate role carried out by the eyes in the process of reading? On the surface, the answer to this question seems obvious. The eyes indeed play an essential role in the act of reading. Without our eyes, which provide the gift of sight, the morning newspaper, school books, magazines and a myriad of other printed materials would be lost to our use.

It seems logical to assume, therefore, that a relationship should also exist between various other aspects of visual function, as well as degrees of visual malfunction, and reading ability. This assumption has been accepted by some, exploited because of misunderstanding or profit by a few and denied by others. As a result of this diversity of opinion, the educator unsuccessful in teaching a child to read and asking the question "Does this child see properly?" gets answers which may be contradictory and confusing. In an effort to reduce some of the confusion which surrounds the role of the eyes in reading, several eye functions will be described; and the relationship or lack of relationship of these various functions to reading ability will be discussed.

It would be appropriate to first define reading disability. The term now in vogue to describe reading disability is "dyslexia." Dyslexia is specifically defined as the inability to read or obtain information from printed symbols in a normal way or in a way commensurate with an individual's intelligence level. Dyslexia is not an "all or none phenomenon."

An individual may be minimally, profoundly, or moderately affected. This condition also may be primary and constitutional or secondary to physical or environmental factors. The primary form is often hereditary, affecting males more often than females. The secondary form may be endogenous as the result of minimal brain damage (dysfunction) or cultural deprivation. The latter is not a true form of dyslexia, and more appropriately may be called reading retardation. Still other individuals may be inefficient readers from physical causes which may be related to the eyes.

The most significant aspect of true dyslexia in any of its forms is that the affected individual has a defect in the central decoding process which is integral in the act of reading. He sees objects, he feels objects, he smells objects; but he is unable to process the word "cow" as seen on the printed page and understand it to mean the four-legged animal he sees in a farmer's field.

Dyslexia should not be confused with slow reading, poor reading, or eye fatigue. While certain individuals read poorer and slower than others, they must not be labeled as dyslexic unless they meet the specific diagnostic criteria of the dyslexic. The diagnosis of dyslexia requires the specialized testing of a poor reader which shows that this individual has a certain level of intelligence but is not reading commensurate with this level of intelligence. A characteristic reading error of a dyslexic is that he "appears" to see words improperly. The dyslexic will reproduce "Koenig" as "Koeing" and cannot recognize the misspelling "solw."

Being a poor reader, yet having the ability to perform arithmetic problems well is a frequent but not constant occurrence in dyslexia. Minor but characteristic neurological impairment is usually seen in dyslexia, but the subtlety of these findings demands an experienced examiner. It may be said that the diagnosis of dyslexia is an exercise of exclusion; therefore, a team approach is essential.

Specific eye functions as they relate to reading ability and dyslexia may be characterized as follows:

Visual acuity. An individual cannot read ordinary print without sight (although he may read Braille). However, even with poor sight of 20/200 or less (which is legal blindness) some motivated individuals can read. They do so more slowly than a normally-sighted individual, but with comprehension at their level of intelligence. Visual acuity and dyslexia are not related.

Refractive error. The need for glasses, even when properly corrected with spectacles or contact lenses, has no significant effect on reading ability and is not related to dyslexia. Training lenses have no beneficial effect on reading ability and may produce a harmful dependence if improperly prescribed.

Eye muscle imbalance. Crossing of the eyes is significant only when a latent in-turning or out-drifting of the eyes is present which causes serious eye fatigue and discomfort while reading. This eye fatigue can lead to poor reading performance and a lack of enthusiasm for reading. Correction of these conditions with surgery, lenses, prisms or exercises — whichever is appropriate — can lead to improved reading performance. Eye muscle imbalance in any of its manifestations is unrelated to the decoding process and therefore is not related to true dyslexia. Many myopic or nearsighted children are

actually better readers than comparable children without need for glasses.

Color vision. The ability to recognize and name most colors is unrelated to reading performance or dyslexia. On the other hand, a total absence of color vision (congenital achromatopsia) is a rare and serious eye defect which leads to legal blindness (20/200 vision). This is not to be confused with the mild red-green color defect that affects 8% of males and less than 1% of females. There is no evidence that a specific blue or violet tone color blindness exists. (Inability to read ditto sheets is probably related to poor reproduction, not to an inability to discern the blue color).

Fusion ability. The inability to superimpose and blend the visual image from each eye, unless it causes a latent muscle imbalance, has no influence on reading ability.

Accommodation. This is the process of increasing the dioptric power of the eye as objects are brought nearer to the eye (also called focusing ability). When this reflex is sluggish or hypoactive, difficulty in reading can occur. This condition *is rare* and is treated with specific eye drops or with bifocals. Bifocals which are prescribed empirically, supposedly for general improvement of scholastic performance, have no beneficial effect on reading ability and may, if worn for a long period, produce rather than help hypoaccommodation. Hypoaccommodation can cause slow reading but is not a cause of dyslexia.

Dominant eye. This is the sighting eye, or the eye preferred under monocular circumstances. It has been found to have no relationship to reading ability or dyslexia.

Controlling eye. This is the eye preferred under binocular conditions. It has no relationship to reading ability or dyslexia.

Pursuit movements. The ability of the eyes to follow a test object smoothly or to progress in smooth steps across a printed page has no causal relationship to poor reading. On the other hand, a poor reader often has jerky and frequent refixations while reading across a line or down a page. This is a result, rather than a cause, of poor reading. No relationship between pursuit movements and dyslexia exists.

Perception or Cerebral Processing. This rather elusive and multifactorial process takes place at higher cortical levels and takes into consideration many factors, not the least of which is experience. The eyes merely provide neural impulses to the brain. The brain in turn perceives and makes intellectual judgments with regard to the impulses provided. Dyslexia may be a type of imperception or misperception, but the defect occurs centrally in the brain and is not caused by peripheral nervous system involvement or eye malfunction.

Eye-hand-body coordination. This refers to how the hand or body relates to and acts upon what is perceived by the brain. Clumsiness or poor body coordination has been treated extensively, at times even by individuals whose formal training and usual activities are ordinarily related to the eye. These practitioners have been known to instruct patients in such activities as drawing circles, walking on a balance-board, and following objects with their eyes. A certain group has even instructed children in assuming certain positions during sleep in the hope the "neurological reorientation" will take place which will cause them to

function in a more normal way upon awakening. These activities have no beneficial effect on the eyes, are not in the province of the eye doctor, have been shown by most experts to have no effect upon reading, and may even be harmful.

What then is the role of the eye doctor in this problem of reading disability in general and dyslexia in particular? The answer is: He must care for the eyes in a carefully-planned, preventive program of visual and eye care; and when specific needs arise, he must treat any disease or malfunction that occurs. To do this, vision should be tested beginning in the pre-school years (between the 3rd and 4th birthday); and glasses and other appropriate treatment should be prescribed only when needed. When they occur, eye muscle imbalances should be treated. While this is being done, the use of glasses, prisms, eye drops, exercises and, in some cases, surgery should be available to the doctor and the patient when necessary. The eye doctor should cooperate with the educator and assist as a member of an interdisciplinary team which includes such specialties as neurology, pediatrics, audiology, psychiatry, psychology, social work, and education. The eye doctor should protect the patient and his family from the frequently-recurring, useless and sometimes harmful fads promoted by those who would exploit the role of the eyes in reading for reasons of either ignorance or profit.

What is the role of the educator regarding eye health? He should encourage *pre-school* vision testing for all incoming students. Vision screening should be carried out in the 1st, 3rd, 5th, and 8th grades. Children seeing less than 20/40 in their poorer eye should be referred to the eye doctor. Any child who rubs his eyes excessively, assumes an unusual head posture with a turn or head tilt, squints, has watery eyes, or complains of double vision should have an in-school eye test and a note sent home to parents. Above all, teachers should not expect eye exercises, perceptual training, eye-hand coordination training, or similar eye-related activities to take the place of the educational process.

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The Nurse's Role in Evaluation and Management of Children with Learning Disabilities

Judith B. Igoe

The Nurse's Role in Evaluation and Management of Children with Learning Disabilities

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INTRODUCTION

Forty thousand school nurses in this country are available to assist with the evaluation and management of children with learning disabilities. Currently, many of these nurses are working closely with classroom teachers, multidisciplinary diagnostic teams and school administrators to provide health care which is particularly well suited to the needs of these pupils. However, not all school nurses are similarly involved; and consequently, certain health services may not be available for every boy and girl with a learning disability.

Only as educators become better informed about the functions of school nurses in areas other than care of the sick and injured will there be full utilization of these professionals. Therefore, it is important to clarify the specific ways in which school nurses can contribute to the well-being of children with learning disabilities.

INDIRECT HEALTH SERVICES

These are activities conducted by the nurse on behalf of, but not necessarily in the presence of, the child or his family. Training and background in health combined with knowledge about learning disabilities enables the school nurse to compile and clarify the data necessary for the maintenance of up-to-date and accurate student health records. This information is an essential part of the total picture needed to draft an educational program for the learning disabled child. The nurse, with parental consent, should include: previous records from schools the student has attended and from all health agencies to which a parent may have taken a child for evaluation; any results of tests for hearing, vision, low-grade infections, behavioral disorders (eg, hyperkinetic behavior), or chronic disease — all of which can have a detrimental effect on learning; and other pertinent data

such as frequency of visits to the school clinic for various complaints and the action taken.

Gaining the cooperation of the family physician or local clinic and exchanging health information adds greatly to the history-taking process and also ensures later continuity of care. Before sending a student to a doctor for evaluation, a written referral from the school nurse containing information about school performance as well as accounts of any special services (eg, counseling, speech therapy, psychological reports) previously provided at school enables the physician to perform a more relevant examination.

Not all physicians, for example, may realize that a detailed and all-inclusive neurological evaluation is most important to school personnel. Frequently the findings of such an evaluation may yield soft signs of little consequence to the child's general health. In terms of learning, these same signs may be important to consider in planning an appropriate school program; and consequently it is most important that the nurse bring school-related needs of this kind to the physician's attention so that the necessary information is available for planning.

During the planning phase for the child with a learning disability, it may become apparent that the child is already under care for some type of health problem. This treatment may involve medication, psychotherapy, or physical or occupational therapy. The school nurse is responsible for bringing this information to the attention of the school and especially the classroom teacher. In the situation where a child is placed on medication, teachers need to be informed of the action of the drug as well as any side effects which might occur.

The classroom teacher can expect the nurse to inquire from other sources as to the child's overall strengths and potentials as a total person. Frequently, the most positive element for a child with learning disabilities is the fact that the child is physically healthy. Calling this information to the teacher's attention, as well as showing the teacher how the child's state of good health can positively influence the remediation plan, is most important. Often teachers have learned from nurses how to bolster a child's self-concept by calling attention to those systems of the child's body which are functioning well, such as a good sense of hearing or good motor function.

Finally, another important indirect service provided by school nurses and involving health information has to do with his/her knowledge of community health agencies. Parents, children, adolescents and school personnel should look to the school nurse for help in locating appropriate health services within the community.

INTERPRETIVE SERVICES

While a multidisciplinary approach to learning disabilities yields the most effective evaluation, communication difficulties are common because of the differences among the various professionals involved. These differences often manifest themselves in the wording of reports which can be confusing to everyone except the writer of the report. Furthermore, the way in which individuals handle their professional roles in dealing with one another may also intensify the differences and add to communication difficulties. For example, the psychologist who designates for the physician

which medical test should be included in the health evaluation or the physician who presumes to tell a teacher what type of academic remediation is needed can anticipate a negative response from the other professional who views this behavior as an infringement on their particular area of expertise.

At the core of many of these problems is the fact that very few of the professionals involved in the evaluation of a child with learning problems have a clear understanding of the work of his colleagues. Not many classroom teachers have worked in physicians' offices, for example. Consequently, it is most important that school nurses, with their combined backgrounds in health and education and their familiarity with both professions, provide a number of interpretive services to facilitate communication and improved team functioning.

SCHOOL NURSE PRACTITIONERS AND DIRECT HEALTH SERVICES

There are more than 50 million school children in the United States, and an appreciable number of them only visit a doctor's office, clinic or hospital for extreme illness or emergency care. Many of these children do not have a basic health care source; and even when personal physicians, hospital-based clinics, neighborhood health centers or other health facilities are available, the children are not brought to them for the care they require. Because of the lack of early assessment and care, many children with emotional disturbances, perceptual handicaps, speech disorders and other problems, may develop progressively more severe problems that may go unrecognized and adversely affect their health and ability to learn.

A practical and effective method of expanding and improving health care to these children has been the preparation of school nurse practitioners to provide high-quality health care in the school setting. By returning to the universities for additional training, many experienced school nurses have completed the additional 9-18 months of study necessary to become qualified nurse practitioners. They are trained to provide specialized types of health services to children. While in school, these nurses increase their knowledge and skills in such areas as pediatrics, growth and development, health education, common childhood problems, and neurology.

Both the school nurse and the school nurse practitioner may assess the child's health status. The difference between them, however, rests with the nurse practitioner's ability to obtain more information in a more detailed manner and to assess its importance in a more meaningful way. This in turn allows her to make more specific suggestions as to "how" and "when" the health problem should be handled.

SUMMARY

One of the most important functions of the school nurse is to bring together the expertise of the educational and medical specialists who *must* work cooperatively in order to fully serve the learning disabled child. Her training in both fields puts the school nurse in a unique position to fulfill this function.

In recent years, the development of the school nurse practitioner has only intensified a trend that has been in progress for some time — the upgrading of the school nurse's position to assist to a greater extent in the diagnosis and management of the learning disabled, as well as other health-disabled children.

A Pediatrician Looks At Learning Disability

Murray M. Kappelman

Chapter 6

A Pediatrician Looks at Learning Disability

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There are very few pediatricians in practice who are not continually confronted with the child who is having difficulties learning in school. This child may show variations as early as kindergarten because of an inability to adjust to the learning situation, or he may not exhibit them until the later elementary and early junior high school grades when levels of learning and teaching are reached with which the child cannot cope. The mother, as well as the teacher, often looks to the pediatrician to begin the investigation that will uncover the bases behind her child's learning disorders.

The field of learning and behavior disorders is a relatively new one for the speciality of pediatrics. Therefore, it must be noted that there are many practicing pediatricians who have great difficulty in uncovering the causes and helping with the remediation of childhood learning disabilities. All too often, the pediatrician will attempt glib responses which cover an insecurity and a lack of information. No teacher or parent should accept such phrases as "he will outgrow it" or "he is too bright and therefore he is bored" or "change teachers or change schools and your problem will be solved."

Today's well-trained pediatrician should be versed sufficiently in the field of children's behavior and learning problems to be aware of both the widespread occurrence and intrinsic complexity of this serious educational and emotional handicap facing so many children within our society. It has been suggested that approximately 20% of our school-age children have some type of behavior and learning disorder, detected and/or undetected. Certainly between 5-10% of all elementary school children perform well below their potential or the performance of their peers.

There are many reasons why a child

cannot or will not learn within the school situation. These may be broken down into either the organic or the functional, ie, those causes which have physical and/or physiological bases versus those causes which have primarily psycho-social and/or emotional bases.

PSYCHO-SOCIAL OR EMOTIONAL CAUSES

The psycho-social problems include acute as well as chronic emotional disorders. The acute emotional disturbance often is caused by a short-term but significant disruption in the school child's life, such as the illness or death of a loved one, marital tension or divorce within the family unit, or separation from friends and family by moving to a new city/or new school. Observable interpersonal problems with the teacher and/or school administration or fearful encounters with bullying peers or upperclassmen may paralyze a child's learning ability and cause an acute situational crisis.

Chronic emotional disorders — for example, long term depression and/or family disruption, pre-schizophrenia, and emotional autism — can cause behavior and learning disorders within the school situation.

In addition, psycho-social problems leading to behavior and learning disorders often involve the culturally and emotionally-deprived child. The culturally-deprived child comes to the school with an extremely poor educational background. The available language and cognitive skills are literally untested, and the child must face new challenges which already have been mastered at home by his classroom peer group. The emotionally deprived child is often withdrawn and frightened of interpersonal responses. He is literally unschooled in receiving attention, affection, and recognition, and is desperately afraid of continuing the interpersonal failure which he has experienced within his home environment. If the deprivation has been severe enough, he is stunted in size, both mentally and physically.

The school phobic child may be defined as the emotionally and educationally immature youngster. These children often represent "only" children or "last" children to enter school. Often these children have not been allowed to progress normally in their emotional maturation because of the parental (or guardian) desire to maintain this child on a dependent level. The adjustment of this child to the school situation requires a therapeutic approach to both family and child from physician, social worker and school community.

PHYSIOLOGIC-ORGANIC CAUSES

There are a number of organic or physical/physiologic reasons why children have difficulties with learning. A condition which does not lend itself to immediate remediation but does necessitate consideration for appropriate school placement is mental retardation. It is extremely easy to fall into the trap of labeling the child as "mentally retarded" by relying on intelligence test scores alone, without considering the fact that many of the physical and physiological causes of learning disabilities, as well as the emotional causes, will result in poor testing results from a potentially-normal child. Therefore, test results must be combined with observed classroom performance and interpersonal reactions in the pediatrician's office, in the home, and in other social situations.

The pediatrician must not forget that children with significant sensory

losses, such as hearing deficits and visual impairments, will have great difficulty in learning. The overtly deaf child and the obviously blind child will be detected a good deal earlier than the elementary school period. These children will not necessarily arrive in school and find themselves as failures because, by this time, the community usually has rallied around to provide them with special educational resources which take advantage of their sensory strengths and attempt to work with and around their sensory weaknesses. However, the child who has minimal to moderate auditory impairment and/or minimal to moderate visual handicaps may "slip by" the preschool period only to stumble intellectually when confronted with the sensory stimuli to which he must respond. Teacher observation plus careful screening by the school health team (the school physician and the school nurse) should uncover these significant sensory losses and allow for teacher-parent-physician conferences which will initiate the immediate steps toward remediation.

NEUROLOGICAL DYSFUNCTION/ HYPERACTIVITY

Another organic-neurological cause for learning disability is minimal brain dysfunction. Approximately 10% of all children with learning disabilities will fall into this category. There is some concern about the use of the term "MBD" since the etiology of this syndrome is not known. Some of the possible causes are:

1. genetic and/or familial
2. biochemical or structural
3. physical damage to the central nervous system
4. an inborn defect within the nervous system
5. faulty nutrition during pregnancy

None of these have been sufficiently documented as a single etiology of the syndrome. Because the cause is unknown, many fads and immediate cures have been recommended in the lay press and even within medical journals. Some of these currently under investigation are the food additive theory, the megavitamin therapy theory, and the caffeine therapy theory

One of the manifestations of MBD that is especially vexing for the classroom teacher is the "hyperactivity syndrome." These youngsters may manifest themselves quite early as colicky, fretful babies. From their history, they may be viewed as unmanageable, uncontrollable toddlers. By a margin of 2:1 to 5:1, most of them are boys. Prior to school, the parents may have felt the child to be "wild and overactive." However, some of these children arrive at school without significant past history of hyperactivity. Only when faced with the necessity of normal regimentation within the school environment will these youngsters evidence overt and unmanageable hyperactivity. Viewing these children carefully, it becomes apparent that not all of them are necessarily *hyper*active; but most of them are *dys*active. This dysactivity may be defined as the inappropriate utilization of muscles for purposeless activity. Thus, the "fidgety" behavior, which is so common with a hyperactive child, is a result of the firing of muscle bundles which have no definite goal and result in purposeless, random, impulsive activity. Studies have been done placing an actometer on these youngsters with the use of similar-age peer controls. The results have demonstrated that some are no more active

than their peer group but are significantly more dysactive.

In addition to the random hyperactivity, these youngsters tend to be distractible, impulsive, variable in their emotional moods, and often quite negative about themselves and their environment.

One must be careful in diagnosing as hyperactive every child whose activity level appears to be somewhat above that of his peer group. Hyperactivity may be a manifestation of emotional disorders, either acute or chronic. Overactivity may be a diagnosis made by an underactive parent and/ or teacher. The understimulated child from an emotionally-deprived family may approach school much like a candy store, running from stimulus to stimulus. His hyperactivity may be a direct result of his social deprivation prior to coming to school. The rare child with psychomotor epilepsy may also have bursts of unexplained hyperactivity. All of the above must be ruled out before organic hyperactivity can be diagnosed.

A very important aspect of this MBD-hyperactive syndrome is that it is a complex and multiple syndrome. In studies by this author, 81% of elementary school children who were found to have a primary diagnosis of MBD also had specific learning disabilities. Approximately 60% of the same group of children had emotional problems, significant and overwhelming enough to impede their self-image and their learning capacity. It is important for the teacher to keep in mind that the use of drugs to reduce hyperactivity will *not* be sufficient therapy to turn a non-learning child into a learning child. Reducing the hyperactivity of these children will make it easier to deal with their specific learning disability and/or their emotional problems, but the special teaching and behavior management are still necessary.

Soft Neurological Signs

On physical examination, these youngsters will have variable neurological findings. Most often, the pediatrician will find certain of the "soft neurological signs." These signs are often cerebellar in nature and include the following: an inability to walk a straight line, an inability to hop on one foot, an inability to stand for any length of time on one foot, an inability to identify objects placed in the outstretched hand with eyes closed (stereognosis), an inability to detect letters traced on his back (graphesthesia), fine motor incoordination (buttoning buttons), difficulty in laterality (problems in discerning right from left and finding appropriate arm holes when attempting to put on a shirt), the inability to do alternating movements of both hands (dysdiadochokinesis), mirror movements mimicking actions on one side of the body when asked to perform these actions on the other side of the body), fine tremors of hands and tongue, and generalized dysactivity or inappropriate and unfocused muscle activity. These neurological signs need not be present in all children suspected of MBD. Recent studies indicate that children with organic central nervous system dysfunctioning begin to lose these neurological signs as they mature. Children with overt MBD may present very little in the way of neurological findings. Therefore, to depend upon the neurological examination alone for a diagnosis is inappropriate. The electroencephalogram has been shown to be of very little value in the diagnosis of the MBD child. (See Chapter 11 for more on epilepsy and EEG.) The incidence of abnormalities is no higher than in

the general school population. It is not an uncommon occurrence for the educational professional to refer a child to the school health team and/or the pediatric clinic with a request for a neurological examination and an electroencephalogram to diagnose MBD or hyperactivity. It should become apparent from the above discussion that these studies may be both inaccurate and misleading unless accompanied by an appropriate history and psychological testing.

Significance of History

This author has done studies on children with learning disabilities comparing them to a carefully-matched peer group and found that the children with MBD, learning disability, and/or hyperactivity have a significantly higher percentage of family histories of learning disorders, behavior disorders, and psychosocial problems. In addition, careful prenatal and perinatal histories of these children and their control peer group indicated that problems during pregnancy — including breech presentation, prematurity, and maternal hypertension — plus difficulties during the birth process and the first five minutes of life were significantly higher in those children who subsequently developed MBD, hyperactivity, and specific learning disabilities. Thus it becomes extremely important for the history taker — whether it be school nurse or physician — to elicit the approprite family history, prenatal history, and immediate postnatal history.

Medications

The child with hyperactivity often has a beneficial response to the psycho-active drugs. These drugs include ritalin (methylphenidate), dexedrine (amphetamine), and cylert (pemoline). They tend to reduce the dysactivity; and as a result, the child becomes less hyperactive, less impulsive, and less distractible. *In contrast drugs such as the barbiturates [phenobarbital] tend to overexcite these children.* The use of the psycho-active agents have been recommended by many authors in the pediatric literature. Good results (as high as 91% in carefully studied groups) with a drug such as ritalin suggest that the dysactive-hyperactive state can be controlled chemotherapeutically. Suggestion has been made in the literature that growth retardation can result from the continuous use of these psychoactive drugs. Therefore continual monitoring of these children's growth charts as well as vacations from drug therapy will be necessary to allow for appropriate growth spurts as well as diagnostic trials to allow a determination of the continued necessity of drug usage. As mentioned above, chemotherapy alone is inadequate treatment. Special education methods as well as careful investigation of psychological problems are additional necessary steps. These children often suffer from severe ego depletion because of rejection from many aspects of our society. Behavior modification with reward and gratification may be the most positive therapeutic intervention that teacher, parent, and physician can undertake. It may surpass the drugs in motivating the child to cope with his illness and comply with the treatment.

CEREBRAL PROCESSING DISORDERS [PERCEPTUAL DISORDERS]

The most complex and significant factor contributing to learning disorders in children is that, in some cases, the brain does not correctly

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process the messages it receives from the senses. These children have normal vision and hearing. However, the process of correlating and synthesizing these received sensory impulses in an organized manner so that accurate responses can be forthcoming in an appropriate amount of time is disrupted. This group of disorders is generally spoken of as "perceptual problems." Problems in one or more of the following areas can lead to a significant learning disorder in children: visual-motor coordination, visual memory, auditory memory, auditory association, auditory discrimination, ability to do abstract reasoning, and ability to work with numbers. Some of these cerebral processing problems may lead to reading disorders (dyslexia). Others will lead to an inability to express one's self appropriately so that the child is viewed as having a hearing problem or stuttering problem or may ultimately become selectively mute because of frustration at his inability to communicate his wishes. These children may manifest some of the soft neurological signs during physical examination by the pediatrician, but they need not necessarily do so. Again, psychological tests along with family, birth, and post birth history will be extremely helpful. It is this type of child who will usually be referred to an appropriate psychologist and special educator for a total team diagnosis. A very high percentage of the MBD children have these complex and debilitating disorders as part of their symptom-complex.

Psychometric Testing

Some pediatricians prefer to learn simple psychometric tests, such as the Bender-Gestalt, in which the child must copy simple designs. The child's inability to do so without evidencing improper use of the pen, tremulous lines, and distorted figures will assist in pointing out possible neurological dysfunctioning. Use of the Draw-A-Person test, in which the child is asked to draw himself or members of his family, will also elucidate problems with coordination but also will bring forward problems in self-concept and family dynamics. Quick tests of auditory sequential memory and visual sequential memory can be done without sophisticated equipment or the investment of a great deal of time. Such sophisticated perceptual tests as the Slingerland and the Frostig, psychological intelligence tests such as the Wechsler Intelligence Scale, communications tests such as the Illinois for Psycholinguistic Abilities, the Peabody Picture Vocabulary Test and the Wepman Scale should be delegated to the psychologist, the educator, and the communications specialist respectively.

The pediatrician may be the primary coordinator of the diagnosis and remediation of his child patient who has been presented to him as a problem in learning and behavior. It will be necessary for him to communicate with the teacher, principal, and guidance counselor. He must refer appropriately and selectively to the psychologist, educational specialist, and communications specialist. When necessary, the neurologist and child psychologist may be able to offer useful information. Ultimately, the pediatrician must gather all the data from multidisciplinary teams and interpret the diagnosis and potential remediation to the parents. In addition, the team of physician, school nurse, psychologist, communications specialist, social worker, special education

specialist, et cetera, must assist the teacher in her daily classroom work with a specific child. Diagnosis without specific remediation advice is much like screening without therapeutic intervention.

As more and more of the dread bacterial and viral diseases are being mastered by antibiotics and immunization, the pediatrician has the time, the need, and the mandate; and he must develop the expertise to begin finally to conquer one of the most serious childhood problems facing society today — the educational and social oblivion faced by the child with learning disabilities.

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Paul Marquis, MD

Socioeconomic Deprivation as a Cause of Learning Disability

Socioeconomic Deprivation as a Cause of Learning Disability

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Approximately 20 years ago, several surveys of the intellectual ability of various American school children were published.[1,2] These showed that the intellectual function (as measured by standardized tests) of lower-social-class children was poorer than their more privileged peers, and that this gap between classes increased with each succeeding school grade. Despite huge federal expenditures on educational programs for economically-disadvantaged children, little progress has been made in overcoming the educational handicaps of poor children. The great bulk of illiteracy in this country continues to be associated with socioeconomic adversity and cultural alienation. If future efforts to prevent educational incapacitation among lower-social-class children are to be successful, the many different ways in which socioeconomic deprivation hinders the learning ability of children must be recognized and dealt with. This chapter will identify biological, environmental, and psychological factors which adversely influence the underprivileged child's ability to learn. It is hoped that this broader understanding of the effects of poverty on intellectual development will lead to a more comprehensive and successful approach toward alleviating the learning disabilities of lower-class children.

BIOLOGICAL FACTORS

Lower-social-class children as a group suffer a much higher incidence of biological, physical and organic insults which result in later intellectual and educational deficiencies. Mothers of many disadvantaged children had poor prenatal and obstetrical care, may have suffered malnutrition during their pregnancy, and were more likely to have given premature birth. Thus, their children are at a disadvantage even before they are exposed to the extra-uterine environment. Premature infants are subject to excessive morbidity, particularily of the central nervous system; and an excessive representation of prematures is found among

the educationally handicapped. The incidence of prematurity among non-white Americans is approximately double the incidence in whites.[4] This huge discrepancy in the risk of prematurity based on social class can only be lessened by making quality prenatal and postnatal care and family planning available to the poor and by expanding and improving health services for the pregnant adolescent.

In recent years, we have seen a marked rise in the incidence of teen-age pregnancy; and this rise is proportionately greater in the lower socio-economic group. Infants of teen-age mothers have a much higher incidence of physical abnormalities, especially of the central nervous system, than the general population. The younger the mother, the greater will be the risk to her baby.

The nutritional status of lower-class children is deficient compared to that of economically-more-privileged children as evidenced by the increased rates of growth failure and iron deficiency anemia found among poor children. Studies carried out in under-developed countries reveal an association of severe malnutrition with reduced intelligence test scores, developmental lags, and defective learning.[5] The severity of malnutrition seen in under-developed countries is fortunately rare in the United States. However, American children are still admitted to urban hospitals with the primary diagnosis of undernutrition; and these children display developmental delays similar to those found in malnourished children abroad.[6] Of more general concern is the role that less severe malnutrition may have on the learning ability of deprived children. It is likely that, while severe malnutrition affects the developing brain directly, minor malnutrition prejudices learning by causing listlessness and anxiety which result in underachievement.[7] Studies of intellectual function in iron deficient children support this concept of mild malnutrition adversely affecting the cognitive process. The scholastic performance of anemic children is inferior to their peers, and there is good evidence to show that this poor performance is due to disturbances in attention and perception.[8]

Along with the greater risk of malnutrition, lower-social-class children suffer a higher incidence of sickness from lead intoxication than the general pediatric population. It is known that children who survive severe lead poisoning with brain involvement have a high incidence of neurologic after effects and learning disabilities. Such severe lead intoxication is presently uncommon in the United States. However, 5 to 10% of American ghetto children between 1 and 6 years of age have elevated blood levels of lead.[9] There continues to be debate as to whether such elevated blood levels of lead, though not devastating to the central nervous system, might result in learning disability. A recent longitudinal study compared 70 children with elevated blood lead levels to lead-free matched controls. Significant differences in mean full scale IQ were found when these children were tested at 4 years of age. The group with elevated blood lead levels fared worse on the psychological tests. When these children were retested at age 7, differences in global IQ and associative abilities, visual motor and fine motor coordination, and in behavior were still present.[10] If these results are confirmed by future prospective studies, 5 to 10% of lower-

class urban children are being educationally handicapped by exposure to the environmental toxin lead.

Besides direct insults to the developing brain from perinatal trauma, malnutrition, and exposure to environmental toxins, excessive amounts of intercurrent illness found in lower-class children may indirectly interfere with the learning process. This increased burden of illness results in loss of learning time and interference with learning during important periods of development. Lower-class children are at a significant health disadvantage with respect to their educational disadvantage.

ENVIRONMENTAL AND PSYCHOLOGICAL FACTORS

Despite the significant role of the biological factors discussed above, the bulk of learning disability found in lower-class children derives not from poor health but from an environment which does not adequately promote their intellectual development and which does not engender the motivation necessary for learning. It has become a basic tenet of learning theory that early experience is of crucial importance in determining both the rate and final level of intellectual ability.[11] This has been documented for a variety of species of animals in controlled experiments. Animals exposed to enriched environments in early life have improved problem-solving ability and improved memory when compared to control animals. This improvment in intellectual function persists to adulthood. Furthermore, the effect of early experience on adult intelligence is considerably greater in animals with more complex neurological systems. This implies that the developing human child should be the animal most affected intellectually by his early experiences.

For ethical reasons, clinical psychologists are unable to conduct prospective, well-controlled studies of the effect of early experience on human intellectual development. However, a great deal of observational evidence confirms the importance of early experience in determining the rate of intellectual development. Surveys of the intellectual function of school children have shown that there is a correlation between poor intellectual function and the following factors:

1. Large families.
2. Later born children.
3. Fewer books in the home.
4. More poorly educated parents.[1,2]

It should be noted that each of these factors is more prevalent in the lower social class. A more direct study correlating early experience and the intellectual function of children was conducted by the Harvard Study Project in the 1960s.[12]

The goal of the Harvard Study Project was to determine the cause of educational competence. The researchers designed a prospective, two-year study of infants of two groups of parents — those who had previously raised educationally-successful children and those who had previously raised educationally-unsuccessful children. The purpose of the longitudinal study was to discover if there were environmental factors contributing to the acquisition of abilities necessary for educational competence. All infants from both groups of mothers were followed from age 12 months to age 36 months. The study concluded that a mother's direct and indirect actions with regard to her one to three-year-old child, especially during the second year of life, are the most powerful formative factors in the

development of a preschool child. Inability to cope with the child's locomobility, language interests, and negativistic behavior was observed in the mothers of the children who later did poorly in preschool and school programs. Because of lack of education, large family, poverty, and a host of other factors, a lower-social-class mother is less likely to meet her child's needs for appropriate cognitive stimulation during this period of time identified as crucial for intellectual development by the Harvard Project Study.

The deleterious effect of environmental deprivation on intellectual development is perhaps most noticeable in language development. Language can only be learned from others; and its development is, therefore, almost completely dependent on the verbal environment to which a child is exposed. Upon entering school, a deprived child has had, on the average, less training in listening to sustained and grammatically complex speech, less exposure to the extensive vocabulary of our language, and less reinforcement for his own verbal efforts.[13] As a result, low-class children enter the school system with a more limited vocabulary and poorer articulation than their more-privileged peers.

Poor language development is an exceedingly severe educational *handicap.* It almost inevitably results in a global delay of cognitive development. This follows from the essential role of language in the learning process. Words are one of the primary methods by which a child pools his varied experiences in order to process incoming stimuli effectively. Poverty of speech leads to a cognitive deficit in the way the brain processes various experiences.[14] The language-incompetent child does not have the necessary tools to deal with abstractions or make generalizations. He basically enters school unequipped to learn.

Along with the real learning deficits which stem from poor language development, limitation of formal language is likely to lead to early labeling of a socially-deprived child as "dull." In many schools, this results in placement of the child in a group which is expected to perform poorly. The child is then entrapped in the cycle of low expectation and poor performance typical of school failure. A gifted child slowed in his learning by delayed language development seldom finds a chance to realize his potential in an academic setting.

Despite all the handicapping factors described above, many educators feel that a socially-deprived youngster can overcome his learning disabilities with the help of innovative programs and patient teachers. However, the student's own motivation to learn is essential to the success of any program of instruction. Enthusiastic teachers are consistently frustrated by the lack of motivation to succeed in school displayed by a majority of socially-deprived children. The source of this indifference to academic achievement is a societal problem beyond the scope of the school system. It stems from the child's and the parents' hostility toward society and is a reflection of the cultural alienation experienced by the poor in an affluent country.

It is obvious from all of the above that there are biological, environmental, emotional, and psychological reasons for the increased incidence of learning disabilities found in the children of the poor. Many of these causes are beyond the scope of the individual teacher or even the individual school system. However,

it is important to note that the socioeconomic and racial differences seen in measured variables at the first grade level become more marked as the child progresses through school. The most difficult challenge in teaching deprived children lies first and foremost in motivating them to become engaged in the learning process, so that school becomes the place where they begin the task of overcoming their educational handicaps rather than an institution which accepts and finalizes their position as second-class Americans. The high incidence of school failure among lower-class children leads to increasing rates of unemployment, delinquency, and crime.[15] Overcoming the learning disabilities of lower-class children must be recognized as one of the most serious problems confronting our society.

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The Child Psychiatrist and Learning Disabilities

Carl M. Pfeifer

Chapter 8

Learning Disabilities and The Child Psychiatrist

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INTRODUCTION

The diagnosis and management of learning disabilities in children is a team effort requiring the participation of a number of professionals, which may include the pediatrician, psychologist, speech pathologist (therapist), and educational specialists such as the educational diagnostician and special education teacher. The role of the child psychiatrist as a part of this team effort depends on the causes of the learning disability and the nature, intensity, and role of emotional factors involved.

It is generally assumed that the role of the child psychiatrist with learning disabled children is to diagnose and, where indicated, to treat the emotional component of the child's problem. While this may be the unique area of expertise that the child psychiatrist brings to the team effort, this role is an oversimplification of the child psychiatrist's function. Since there are multiple causes of learning disabilities (biological, neurological, psychological, emotional, familial, social and educational or any combinations of these), it is necessary for the child psychiatrist to be able to recognize and understand the relationship of these factors if he is going to adequately carry out his functions. Even when the primary cause of the learning disability is not emotional, most children with learning disabilities develop related emotional problems by the third or fourth grade. If the child's emotional reactions are not recognized and appropriately managed, they may become more handicapping than the original learning disability.

The child psychiatrist is usually consulted when the child's behavior results in concern by or distress to the adults in his environment, either at school, home, or the community. It is relatively rare for a child psychiatrist to be consulted if there are no emotional or behavioral problems, unless a child with a learning handicap fails to respond to remedial efforts and special education.

Fifty to seventy-five percent of the children referred to child psychiatrists for emotional and/or behavioral problems also have some difficulties in the academic areas. Behavioral problems which are primarily caused by academic failure will lessen if effective educational intervention improves the student's school performance. In other cases, the emotional problems are the primary cause of the child's learning disability and often require that the primary intervention be psychiatric. In most situations in which there are significant learning or emotional problems, intervention needs to be directed toward both concurrently.

Since any psychiatric disorder may result in a learning problem, a full exposition of all the possibilities would require a complete textbook on child psychiatry. Conversely, primary learning disabilities may result in a wide range of emotional/behavioral responses which may mimic most, although not all, psychiatric disorders. Therefore, the following discussion will briefly describe some of the more common emotional reactions children have to primary learning disorders and the more frequent emotional disorders which may result in impairments in the child's academic learning. In addition, several other factors that may impair learning will be briefly outlined, since they must be included in the differential diagnosis by the child psychiatrist. These descriptions are not intended to be an exhaustive description of psychiatric factors in the learning disabled child, but rather to help the teacher determine when psychiatric consultation may be indicated.

EMOTIONAL RESPONSES TO PRIMARY LEARNING DISABILITIES

The ability to adjust and to learn in school is perhaps the most important task that our society expects of the school-aged child. Therefore, the failure of the learning disabled child to make satisfactory academic progress usually results in a sense of failure, insecurity, and lowered self-esteem. Frequently the child will feel perplexed and confused by his academic failure because in other areas of his life, he is able to perform quite adequately and may even be especially skilled and talented in certain areas.

The failures in learning often constitute a threat to his self-concept of being a competent person, resulting in anxiety, worry, and self-doubt. Since chronic anxiety is such a distressing feeling to children, as it is to all human beings, the child is likely to evoke psychological defense mechanisms to control and relieve himself of the anxiety. In school-aged children, denial, repression, and over-compensation are frequently-used defenses. Thus, the child may come to say and believe that he isn't interested in or "doesn't care" about school and learning. Alternately, he may put all of his energies into an area in which he can succeed in order to develop a sense of pride, rather than failure and anxiety. Such compensatory areas may involve anything other than academic work, eg, being the best baseball player or the biggest bully in the class.

Responses of other important people in the child's environment — such as family members, teachers, and peers — will play an important role in deciding whether these defenses are reinforced or whether he is able to recognize and communicate his distress.

PSYCHIATRIC [EMOTIONAL] DISORDERS WHICH MAY CAUSE LEARNING DISABILITIES

Children may have a wide range of psychic conflicts developing primarily from situations in the family that interfere with the ability to learn in school. The child may be completely or partially aware of these situations, or the conflicts may be completely outside of his awareness. The following is a brief outline of some of the major emotional and mental disorders that may result in an impairment in a child's academic performance, and which may simulate a primary learning disability.

Competitiveness

It is not uncommon, particularly in middle-class families, to find a child who is caught up in a competitive-oppositional interaction with one or both parents. Often this develops in families where there is pressure on the child to perform consistently at high achievement levels in all areas. In the child's attempts to maintain his autonomy, determine his own goals, and keep his sense of being as a separate and distinct individual, he feels he must not comply, or must even do the opposite of what his parents wish and demand. The primary struggle with the parents may not even be related to school, but to such issues as bedtime or friends. However, the conflict may be "displaced" or "transferred" to the learning situation in school, since parents also wish him to perform well academically. This conflict may be carried over from the time the child was age 2 or 3, or may begin at a later age. If the child is insecure with his identity, the issue of being an autonomous and separate individual may result in opposition to academic learning at almost any age.

Conflicts with Authority

A similar but distinct form of the competitive-oppositional conflict is the child who is resistant and hostile to adults in authority. Here the conflict is not primarily related to achievement, particularly academic achievement, but to the general expectations of adults and struggles in the areas of discipline. The major issue is related to control — who will win out, who will be boss. The parent who feels that the child must always listen to him and obey in every area, even those of relatively minor significance, will frequently produce a child who is as controlling, oppositional, and as stubborn as the parent. If this struggle is transferred to other authority figures — teachers in particular — then problems in school will develop.

Fear of Assertiveness

The child who is shy, withdrawn, anxious, and fearful is often afraid to risk much in the academic learning process because of his fear of failure and its attending shame, humiliation, and guilt. The family pattern described above, in which the parent expects complete obedience, may cause the child to be meek and fearful instead of hostile and oppositional.

Chronic Anxiety

Chronic severe anxiety from any source interferes with the ability to concentrate, learn, and remember. These children are engrosssed with their own fears, preoccupations, and

fantasies. School phobia or refusal can be considered one particular syndrome in this category. In the so-called "classical" form of school phobia, the child is preoccupied with fears that his mother will undergo some harm if he is separated from her. Preadolescents and early adolescents are often preoccupied with fears, anxieties, and fantasies in the sexual area, leaving less energy available for academic achievement. Frequently, there is a decrease in academic achievement in the 11-14 year old age group; and even good students may develop learning problems at that time.

Depression

The chronically-depressed child expends most of his energy in his depression and is unavailable for learning. In school-aged children, depression is often difficult for parents and teachers to recognize because it is expressed differently than in adults. Frequently, depression manifests itself among this age group in the form of behavior problems, antisocial acts, or hyperactivity. Treatment approaches to the child who is chronically depressed are quite different than they are for the child with a primary behavior problem due to other causes. Thus, it is quite important that this distinction, which usually requires training and experience as a child mental health professional, be made.

Impulsivity

The impulse-ridden child is unable to control himself sufficiently to benefit from the learning situation in school and thus develops a "learning disability." Impulsivity is frequently present in the same child who also is distractible, hyperactive, and explosive. Thus we see that this cluster of symptoms can be due to physical/organic as well as emotional/psychologic causes, such as inconsistent mothering during infancy, inconsistent discipline throughout certain crucial stages of the child's development, and impulsive parents or other important people in the child's environment.

Motivation

An extremely important factor related to the child's academic achievement is his motivation to learn. One factor involved in motivation is the drive or desire to explore and master the environment. From another point of view, we are motivated in those areas in which we receive rewards. For all of us, approval, attention, and love from people who are important to us is perhaps the most important reward we can receive. Identification — the attempt to emulate those we consider important — is another important source of motivation. If the people with whom the child primarily identifies do not place much importance on academic achievement, then the child will not incorporate schooling as a significant value; and he will be unmotivated. In certain types of psychiatric disorders, the basic capacities to form identifications with other people is impaired. In these situations, even if the important adults in the child's environment value academic learning, the child will not be able to identify fully with these adults or their values. Thus, anything that interferes with the motivation for learning can result in a child with a "learning disability."

Psychosis

Although relatively rare in school-aged children, a psychotic condition (schizophrenia, autism, et cetera) is likely to interfere with the child's ability to learn. This may result from

the child's loss of reality contact, his confused thinking, overwhelming anxiety, or a whole range of other features that are part of the psychotic process. In some children, the major feature of their psychotic disorder is their distorted thinking. These children are often confused with children who have a primary language disturbance, and a careful differential diagnosis is needed to distinguish these two entities.

ADDITIONAL CONSIDERATIONS

For an adequate psychiatric assessment, it is necessary to obtain information about the child and to assess the interactions between that child and his family. This sometimes causes difficulty, as the school does not have the authority to force parents to participate in the psychiatric evaluation of a child referred to a psychiatrist because of learning problems. Assessing a child without his family participating is similar to asking a pediatrician to work without his stethoscope and the use of lab tests.

The assessment of the child's emotional status can only be completed when the child psychiatrist has information about a number of other additional factors, which include:

1. The child's physical health, particularly in relationship to: (a) chronic illnesses, (b) vision, (c) hearing and (d) neurological intactness.
2. The child's intellectual abilities and deficits.
3. Sociocultural factors that can affect school performance.
4. The quality of the school and the child's educational experience.

CONCLUSION

The importance of emotional and psychological factors can only be understood and managed if one takes into account the entire picture of the child and his biological, psychological, familial, social, and educational environment. Failure to pay sufficient therapeutic attention to the emotional components involved in learning disabilities is probably the most serious omission made by non mental health professionals. In every situation, including the relatively extreme situation of childhood psychosis, consideration of all of these factors is crucial to a complete understanding, diagnosis and appropriate management of the handicapped child.

Learning Disabilities and the Role of the Psychologist

Albert E. Riester

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Learning Disabilities and the Role of the Psychologist

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Psychologists working with schools feel that they bear a major responsibility for a differential diagnosis which distinguishes between learning disorders, mental retardation or emotional disturbances. In addition to this primary diagnostic responsibility, the psychologist may function as a technical consultant to schools in the following areas:

1. Screening for early identification of specific learning disabilities.

2. Developing intervention programs and individualized educational plans.

3. Evaluating (a) special education programs and (b) individualized educational plans

4. Consulting directly with educators on a regular basis to resolve academic or interpersonal problems.

The school psychologist has knowledge of social learning theory, behavior change, psychodynamics, psychopathology, psychotherapy, child development and neuropsychology, expanding his role from that of psychological evaluator of the individual child. He may also act as a consultant to schools in determining why a child's achievement is not commensurate with his intellectual capabilities. By providing psychotherapy and educotherapy services, the psychologist also helps the child and his parents understand the handicap.

To determine why a child is not learning requires a coordinated team effort. In addition to diagnostic and consultation services, the psychologist may also assume the role of coordinator to ensure that a child with a specific learning disability receives intervention services from the school and therapists in the community.

PSYCHOLOGICAL EVALUATION PROCESS

The psychological evaluation to determine whether a child has a specific learning disability is only a part of the comprehensive assessment. This assessment requires the skills of other specialists to perform the following services:

1. Medical evaluation including vision, hearing and neurological
2. School, family, and developmental history
3. Educational assessment
4. Neuropsychiatric evaluation
5. Speech and language assessments.

The ideal individualized comprehensive assessment should provide opportunities for various specialists to coordinate and collaborate. A fragmented effort during the assessment process will generate a fragmented and ineffective intervention plan for the child.

Part of the psychological evaluation consists of many and varied specific tests to assess the following areas.

a. Intellectual functioning of the child

b. Achievement levels in subject content, reading, spelling, and arithmetic

c. Language and learning characteristics

d. Developmental delays

e. General values, attitudes and interests

f. Personality characteristics

g. Emotional problems

In addition, the psychological evaluation includes observing and interviewing the child and informants such as parents and teachers. The psychologist either takes the developmental, school, and social history himself or incorporates this information into his assessment and report if it has been performed by other specialists. Obviously, not all the available tests are given to a single child. The selection of the specific test battery is the responsibility of the psychologist, and it is based on the child's age, particular set of problems and skills, and preference of the examiner.

ANALYSIS OF DATA

The following criteria should be met to make the diagnosis of specific learning disability:

1. The child's measured intellectual level should be in the normal range.
2. Emotional problems or mental retardation should not be primary in accounting for the disparity.
3. Environmental factors such as poor learning opportunities, poor teaching, and bilingual problems should not account for the discrepancy.
4. The specific learning disorder should be due to neuropsychological deficits (organicity).

After the above diagnostic criteria are met, the psychologist further analyzes the psychological test data, interview information and observation data to determine the specific nature of the learning disability. The psychologist then determines the child's learning characteristics in the following areas:

1. The symbolization process (decoding and encoding of numbers, letters and words)
2. Motor functioning (hyperactivity, hypoactivity)
3. Attention to stimuli
4. Short and long-term memory
5. The extent that specific cognitive, psychosocial, neuropsychological and environmental factors impair the child's capacity to compensate for his learning disability.

In further describing how a child

interprets and uses language symbols, the psychologist develops a profile showing which learning modality is strong and which may be weak. For example, a child's testing assessment may indicate a visual input problem which impairs his reading achievement. The auditory learning modality, however, may be adequate and can be identified as the way the child best learns about his culture and subject content in the classroom. When he is required to express himself about information gained by auditory learning, his performance is found to be adequate. However, the graphic expression (writing) of language symbols is weak, perhaps due to a combination of both poor reading skills and a neurologically-based fine motor deficit which interferes with handwriting and sequencing when language symbols are expressed graphically.

In this example, the psychologist would recommend that special instruction should focus on the auditory channel to learn subject content in the classroom. The teacher or parent's evaluation of the child should be by oral examination rather than in writing (which is the deficit area). For this child, remediation of his capacity to visually decode and graphically express symbols would be the goal of the individualized special education plan. From this profile, the educational diagnostician or qualified special education teacher would prescribe the specific instructional arrangements, teaching methods and materials which are congruent with the child's learning strengths, interests and how he becomes motivated to attend to abstract language tasks. The psychological report should suggest easily achievable goals so that *educators do not develop expectations which are impossible* for the child's particular developmental, neurological, or psychological functioning.

As the model suggests, specific problems in the motor area may be detected. For example, hypoactive or hyperactive behavior may exist in the child with a learning disorder; and this needs to be understood for educational planning and possible referral for medication. A poorly coordinated child cannot compete in physical education. Remedial efforts may be less effective if he is hyperactive. Perseverative behaviors or the repetitive involuntary continuation of a behavior makes teaching new information extremely difficult. This child may be unable to make a smooth transition to another task or leave a behavorial pattern which is not productive or efficient.

The psychological report should also describe how a child attends to abstract and concrete tasks. Information explaining how the child's capacity to attend to a task improves by either positive or negative reinforcement can be used by the teacher in her educational planning. Often, a psychological report will describe the child's motivation to compete in specific tasks. Furthermore, the psychological evaluation points out a child's capacity to attend to a variety of tasks with an adult authority figure in a one-to-one situation.

The child's capacity for short and long-term memory is another critical cognitive function which must be understood.

A neurologically based inability to retain certain abstract concepts may be present — some learning disabled children are often very concrete in their thinking. When abstract reasoning ability is not present, the learning disabled child may not be able to develop insight and become motivated by a positive teaching relation-

ship and positive reinforcement.

In the psychosocial area, many learning disabled children have met with repeated failure because their handicap is not understood by peers, adults and themselves. Often, the psychological evaluation identifies emotional problems which further interfere with the child's capacity to compensate for his learning disability. For example, it is common to find that the learning disabled child is anxious, depressed and has low self-esteem. Often, these children are not motivated to learn from adults because of their hopelessness and despair due to repeated failure. They may become behavior problems in school because this is the only way they can gain recognition. When negative attitudes toward learning evolve, further teaching efforts only serve to remind the child of problems which he does not understand. Instead, he believes he is stupid and is forced to find other ways to excel and develop a more positive self-image. This is one example of maladaptive behavior.

In addition to the diagnosis of the emotional problems which may be present, the psychologist may see the patient for psychotherapy to help him understand his handicap and begin to change his attitudes toward learning. The therapeutic process often focuses on developing the child's self-confidence so he can more effectively cope with his handicap. With a more positive self-image, the child generally may be more responsive to the teaching effort and thereby experience success. Psychotherapy with learning disabled children is also effective in treating self-conflicts which interfere with interpersonal functioning and general adaptation.

CONSULTATION FOR PROGRAM EVALUATION

Few psychologists practice their profession without a sensitive regard for the scientific model. For this reason, school officials may consult with psychologists for help in designing a method to evaluate whether or not a child's individualized plan is reaching formulated goals and if the program in general is reaching its goals and objectives.

To illustrate the importance of evaluation, special education services have been vulnerable to criticism because they have not always been successful in improving the reading skills of children who are diagnosed as having learning problems. This criticism is often unfair because the research designs which collect the data to reach these conclusions assume that learning disabilities can be "cured" by environmental intervention. Therefore, the outcome of a child's participation in special education is judged as "not good" if the learning disabled child is not "cured" and able to read. The psychologist, in consulting on program evaluation, can work with educators to evaluate progress with clearer assumptions based on the individual child. For example, some forms of learning disability will require permanent or semi-permanent special teaching methods to help the child compensate for an ongoing handicap rather than "curing" a neuropsychological condition. Success for children with this type of learning disability may require reliance on the auditory learning skills. In other words, the psychologist's skills in evaluating the goals of the individualized program or plan may be invaluable in future

planning for special education and in assisting school officials in meeting accountability requirements to the school board and the community. Most important, good evaluation designs with clear assumptions will generally assist school officials in making program changes to further expand efficient and effective educational services for the learning disabled child and his family.

SUMMARY

In summary, the psychologist's role in identifying why children do not achieve according to their capabilities includes not only the psychological evaluation, but consultation, therapy, and case management. The perspective which the psychologist offers can assist the school and community specialists in developing curriculum and treatment activities which are based on the information obtained from the comprehensive assessment and evaluation data. Furthermore, the psychologist can help the school and parents in understanding that a child with a specific learning disability can learn new ways to compensate for the disability. Once the child's specific handicap is identified, new ways to learn and respond to the environment and curriculum can be developed which will enable the child to cope with his problem and function in accordance with his capabilities.

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Motor Activity and Learning

Robert Strauss

Motor Activity and Learning

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The development of motor ability is only one aspect of the individual's adaptive process on the road to maturity. Nevertheless, it represents a large portion of the child's time and energy. In the past ten years, we have seen tremendous interest in and emphasis on children receiving early motor training for the development of their motor ability.

Through body movements, people communicate their thoughts and feelings to one another. Motor development is equally associated with cognitive and learning processes. Learning must be considered as a function of the mind and the body. When we consider the number of "slow- learning" students in our schools who possess some form of motor dysfunction, the need for learning motor skills becomes more obvious. The acquisition of motor proficiency is an important aid to children in their total growth and development.

MOTOR BEHAVIOR

Motor actions may be classified into two basic groups — gross and fine. Gross motor acts include motor skills involving the large skeletal muscles which produce mobility of the whole body through space. Fine motor acts usually refer to those motor skills involving small muscles, particularly those of the hand.

Motor behavior, as it will be referred to in this chapter, is the demonstrated level of ability to express with movement the results of information which has been perceived through the senses. Perceptions are initiated through the visual, auditory, tactual, and kinesthetic sense receptors, integrated through the nervous system, and finally distributed through the response mechanisms as observable motor behavior.

Rosenbloom (1976) cites evidence showing the important part that movement plays in contributing to

the development of physical, perceptual, visual-motor, language, emotional, and social growth. Each individual has a different genetic structure, environment, and rate of maturation; and all are important contributors to ultimate, individualized motor behavior.

MOTOR BEHAVIOR READINESS

All too often the assumption is that all normal children achieve certain motor abilities at specific ages. However, some children, for unknown reasons, do not reach the proper level for their age, finding many motor tasks beyond their ability. Rather than being fun and stimulating, these activities become unpleasant, confusing, and psychologically disturbing. This failure affects these children in many other functions of their life. The forces that affect one phase of development make an imprint on others as well. Frost (1971, p. 110) suggests that:

"readiness can be physiological, psychological, sociological, or a mixture of all three. Physiological readiness can lead to psychological readiness, psychological readiness is influenced by sociological readiness, and all are related to maturation and learning."

There are certain stages during a child's development, these periods follow each act that the child is first capable of performing effectively. As Hottinger (1973, p.9) points out, "behavioral changes cannot appear *until the child's central nervous system is mature enough* for the behavior to be learned."

MOTOR BEHAVIOR AND LEARNING

Since most behavior is expressed through some form of mobility, we might assume that the foundation of learning is some type of movement. This is not to suggest that learning cannot take place without movement. However, the movement itself can provide a measurement of what has been learned.

Through the control of motor performance in a developmental motor learning program, nerve pathways and connections are firmly planted in the nervous system; thus, a foundation is laid for more complex motor tasks as well as concepts upon which cognitive processes are formed. Although the child's cognitive processes are average or above, the failure of the motor dysfunctional child to express his thoughts may be due to motor disturbances which impede the integration of information into a plan.

Many children who demonstrate some degree of motor dysfunction are referred to as immature, with "time" being prescribed as the remedy for this immaturity. As educators, we need to be concerned with the maturation level of the child. Recognizing that children may be entirely different yet normal is most important. A child may develop relatively slowly in certain traits and quickly in others. Rapid development, as such, may not necessarily be desirable; nor is relatively slow development particularly undesirable. Forcing a child into performance before he is psychologically or neurologically ready may be disturbing and can establish negative attitudes. Rather than emphasizing the child's motor performance level in terms of chronological age standards, the child' level of performance should be compared to his maturational age.

A motor learning program can help the child learn to integrate visual and auditory performance with motor performance and thus achieve better readiness for school. Such a program can also give the child an area for success which will help him form a positive attitude toward school experiences.

MOTOR BEHAVIOR AND READING

Before one can determine the relationship of reading to motor behavior, a definition of reading must be established. In keeping with the purpose of this text, a motorbehavioral definition of reading has been provided by Masland and Cratty (1973):

"Reading is a complex process involving the interaction and integration of ocular, perceptual, associative, and motor abilities.

"In the process of reading, the individual must first regulate the larger muscles in his body to stabilize his visual apparatus, then he must scan the printed page through proper eye movement control. As he looks at the page, ocular processes must permit the forms on the page to be accurately transmitted to his retina and to his brain. He must differentiate the various simple and complex letter-word shapes.

He must then relate these letter-word symbols to the verbal symbols and to the concepts for which they stand. Within the classroom, these meanings must then be translated into written or verbal symbols so that the teacher will receive confirmation that the meanings THE CHILD attaches to a word-shape are the same meanings SHE gives to them. This process also presupposes an already existing verbal language structure bearing reasonable similarity to that of the written material." [*Masland and Cratty, 1973, p. 141*].

From the above definitions, one can begin to see the complexity of the reading process. However, it is interesting to note that there is general agreement that language development is a precursor to reading achievement. It is necessary for motor behavior specialists to look at language development in relation to reading remedition. Singer (1973, p. 28) states:

"Language skills are heavily perceptually oriented and reflect perceptual-motor behavior. The conception of words, the formation of mouth movements and facial expressions, and the production of words describe activity in this area."

The theory that early motor learning experiences may aid children in language concepts, which in turn serves as a basis to learn reading skills, is not new. Several educators have investigated the interrelatedness of motor and language and cognitive development in young children, and it is possible that cognitive and language development (a precursor to reading) and motor behavior are related.

Because of the concern with reading disabilities, many studies have been conducted using motor development techniques as part of a total program of reading remediation. A critical analysis of many of the popular remediation techniques employed have been cited by Masland and Cratty (1973) in such areas as physical education, lateralization of brain function, improvement of eye-movement, body spatial awareness, visual-motor coordination, and perceptual-motor training. Only a few studies showed, in a valid manner, that motor learning programs as a remediational technique for reading disabilities were helpful. However, some evidence indicates that there are possible benefits for

the pre-school child or a child with a specific sensory deficit in a reading-readiness program.

Most studies indicate that the closer the association of the ultimate task (eg, reading) is to the learning experience, the more directly beneficial will be the results. The statement that motor learning programs will enhance reading skill is, by itself, equivocal. However, a well-constructed and properly-thoughtout motor learning program can be of inestimable value in teaching certain readiness skills to *certain types of children who cannot learn them in other ways.*

CONCLUSIONS

A developmental motor learning program designed to offer an opportunity for a child to learn and develop through activities that are initiated and enjoyed by him is apt to benefit his total development. A well-constructed developmental motor learning program can aid young children in developing their motor, language, and cognitive skills, thus laying a foundation for learning to read. A motor learning program provides an opportunity for progressing from basic, simple exploratory movements to more complex and specific motor skills. Children should be given the chance to improve control over their own bodies in order to feel more confident about participating in play activities requiring certain skills. The atmosphere of such a program also provides stimulation for children to develop their cognitive abilities through a medium which is familiar and enjoyable to them — movement and play.

Children should be given the opportunity to explore the movement capabilities of their own bodies and relate these to directional and spatial concepts provided by instructors. The acquisition of reading and writing skills is dependent on the awareness of left and right and the directional perception of up, down, back, and front. These provide spatial references for recognizing shapes, letters, and words. Verbal material is given a very concrete real-world base in a manner that is both fun and easy for the child to understand. He should be presented with tasks which may be solved through selected motor or verbal expression or a combination of the two. The feedback provided by an attentive instructor in such a situation is most important to the child's motor and language development.

Perceptual abilities are at times poorly developed in the motor dysfunctional child. A developmental motor learning program encourages the child to rely upon his actions and language in problem-solving situations, while helping him to organize and interpret his visual, auditory, and kinesthetic perceptions. Helping young children develop through an organized movement program must be considered a matter of offering stimulation and challenging opportunities at a level which is developmentally appropriate for each individual. Such a program should not replace other planned learning experiences, but can serve as an additional important dimension.

PRACTICAL EXERCISES

The following pages suggest a progression of selected motor activities to help non-trained classroom teachers, within the confines of their classroom, teach exercises in which children can discover what their individual body parts and body as a whole can do while coordinating

thought with performance. Further, the suggested teaching methods and activities will provide the children with procedures that will foster exploration of their surroundings (spatial awareness) as related to their bodies.

Children must be able to move smoothly and quickly from one position to the next. Such free movement aids in making mental adaptations for motor actions. Such a program teaches children to think for themselves, learn to recognize their own capacity, and use their own creative powers, while no judgment is placed on them for a correct or incorrect response.

One of the more notable outcomes of such a program is the development of postural control, which is fundamental to total body efficiency, whether performing on the playground or in the classroom. Children need to possess muscular control in a sitting or standing position, while reading or writing, and in activities on the playground such as walking, running, or throwing a ball. Postural control may also be a precursor to attention span, which is needed to complete a given task — a prerequisite for successful achievement in the classroom. The teacher must remember that simply nagging a child to "sit up straight" is *not* the way to achieve this result. Postural control must be the natural end result of the entire process.

Teachers who have tried the free movement exploration in teaching motor activities find it an exciting mode for children in learning new and/or refining old movement skills.

TEACHING HINTS

Following are some teaching hints which may be helpful in introducing or refining motor skills.

General Considerations

1. The program must be FUN, both for the teacher and the children.
2. The order of progression in developing movement abilities should be presented as follows:
   a. Bilateral — Activities involving movement of both sides of the body.
   b. Unilateral — Activities involving movement of one side of the body.
   c. Contralateral — Activities involving movement of both sides of the body in opposition to each other.
3. Exploratory movements may be done to command, or they may be interpretive and creative, (verbal, beat of a drum, or music).
4. Activities should begin with the children answering questions or demonstrating through some motor action answers to questions that are related to the suggested activities.
5. Although the activities selected are to aid children in developing their motor abilities, a creative and innovative teacher can readily use those movements to serve as an adjunct to such academic skills as language, spelling, reading and math.
   a. Language — Have children verbalize their movements, "I am walking forward; I am in front of; I can swing my left leg while standing on my right foot."
   b. Spelling — Reproduce letters of the alphabet on 5"x8" cards, placing them on the floor and/or walls around the room. Children are told a word and they must locate the letters sequentially and spell the word by hopping, jumping or bouncing a ball on or near the letters (if the letters are put on the walls) of the given word. As soon as they have spelled the word by

some means of gross motor movement, have them write the word on the chalkboard and then on paper.

c. Reading — Write instructions on 5"x8" cards for the children to read and carry out the directions as instructed according to the written material. EXAMPLE: "Go to the back of the room and get a red balloon and tap it in the air with your left hand five times." The teacher may then have the children verbalize or write the task completed.

d. Math — Have the children hop, jump, tap a balloon, or bounce a ball the number of times a number represents (eg, the answer to a math problem). EXAMPLE: The number 2 would equal two hops; 2 + 2 = ____?, children would then bounce a ball or hop four times.

BALANCE ACTIVITIES

Ask the children, "How many ways can we stand?" After they have had sufficient time to demonstrate through free exploration all the ways they can stand, ask them to:

1. Stand as if you were proud.
2. Stand as if you were sad.
3. Stand on one foot. "What foot are you standing on?"

NON-LOCOMOTOR ACTIVITIES

Ask the children, "How many ways can we move our body parts while standing in one place?" After the children have finished demonstrating all the possible ways they can move their body parts while standing in one place, ask them to:

1. Bend Forward.
2. Bend backwards.
3. Swing your left arm and left leg together.

LOCOMOTOR ACTIVITIES

Ask the children, "How many ways can we move our bodies around the room?" After the children have completed exploring the possibilities of moving their bodies around the room, ask them to:

1. Walk backwards.
2. Walk sideways.
3. Jump around the room using both feet.
4. Run in one place.

EYE-HAND COORDINATION

Ask the children, "How many ways can we move the balloons with our hands?" After they have demonstrated all the ways they can move a balloon with their hands through free exploration, ask them to:

1. Tap the balloon with both hands while standing in one place.
2. Tap the balloon with one hand while standing in one place. What hand are you using to tap the balloon?"
3. Tap the balloon with the other hand. "What hand are you using to tap the balloon?"
4. Get a partner and tap a balloon back and forth to each other using both hands to tap the balloon.

BALL ACTIVITIES

Ask the children, "How many ways can we move the ball with our hands?" After they have explored the different ways to move a ball with their hands, ask them to:

1. Drop the ball and catch it.
2. Bounce the ball with both hands while standing in one place.
3. Bounce the ball with both hands while walking.
4. Bounce the ball with one hand while standing in one place. "What hand are you using?"

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Neurologic Aspects of the Minimal Brain Dysfunction Syndrome Including Learning Disabilities

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Neurologic Aspects of the Minimal Brain Dysfunction Syndrome Including Learning Disabilities

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HISTORICAL PERSPECTIVE

After the pandemic of encephalitis (lethargica) in 1918 and 1919, the effect of brain damage on the production of children's behavioral disorders began to receive professional attention. A leading neurologist, Dr. Strauss, suggested that organic brain damage could produce behavorial abnormalities which were primarily characterized by hyperactivity, distractibility, and aggressiveness. Later he added perceptual problems to the list of abnormalities.* He then expanded his theories and postulated that in the presence of these behavioral characteristics and *despite the absence* of documented brain damage or disease, the behavioral characteristics were, nevertheless, the result of organic brain damage.

*See chapter 6 for further explanation of "perceptual problems."

Subsequently neurologists, pediatricians, educators and psychologists came to recognize and support these theories. Eventually the characteristics were grouped into a cluster of symptoms called Minimal Brain Dysfunction (MBD). But the concept of MBD, its component learning disabilities and associated theories have led to confusion and misunderstanding, frustration and disenchantment. However, a beneficial result has been that medical therapy, educational therapy, and behavioral therapies have been designed and applied to large populations of children — approaches that were virtually impossible when psychoanalysis and other psychiatric therapies were thought to be the only approaches to the behavioral problems of these children.

MBD is not a rare condition. Of common neurologic problems in childhood, approximately .5% of

children have cerebral palsy; approximately .5% to .75% have seizures; and between 2% and 3% have mental retardation of all degrees. In contrast, estimates of the percentage of the childhood population suffering from MBD range from 3% to 20%. Therefore, of the chronic neurologic diseases of childhood, the most prevalent condition is MBD.

MEDICAL HISTORY

There are a number of important factors that place children at high risk for having MBD. Low birth weight, for one, is associated with poor classroom behavior. Table 1 illustrates the high prevalence of undesirable behavioral characteristics in the classroom, eg, overactivity in children who were born prematurely. Also, a number of other neurologic problems are associated with prematurity. Mental retardation, cerebral palsy, and seizures are much more common in children who were prematures.

There are complications of pregnancy and delivery that are associated with the development of the MBD syndrome, although there is some controversy about them among researchers. In general, MBD occurs more frequently when there is a history of bleeding and threatened miscarriage, hypertension or other signs of toxemia of pregnancy. MBD is more prevalent if the degree of toxemia is so severe as to require medication for the protection of the mother's health and life. There is a greater incidence of MBD when there are maternal infections during pregnancy. Other maternal health problems during pregnancy that increase the risk of MBD are surgery, physical trauma, drug and alcohol addiction, and ingestion of certain medications. More profound and easily documentable medical mishaps in the newborn such as intra-cranial bleeding, hydrocephalus, dehydration necessitating intravenous replacement, and head trauma may be responsible for MBD. Bacterial and viral meningitis and poisoning have been associated with later MBD.

Low socioeconomic status contributes to poor medical care, a high incidence of prematurity, a high incidence of malnutrition in the mother, a high incidence of malnutrition in the infant and a high incidence of environmental depriva-

TABLE 1
Fluctuation of Classroom Behavior with Birth Weight

Classroom Behavior Evaluation	Birth Weight	
	Prematures (N = 50) 4 lb, 8 oz and under	Siblings (N = 50) 5 lb, 9 oz and over
Normal	36%	58%
Borderline abnormal	30%	30%
Abnormal	34%	12%

Adapted from Drillien (1964), p 258

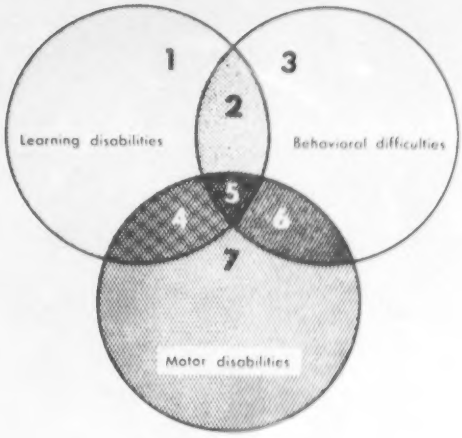

Figure 1

Venn diagram depicting three major target symptoms and possible symptomatic combination. 1) Learning disabilities, no motor disabilities, no behavioral difficulties; 2) learning disabilities and behavioral difficulties; 3) behavioral difficulties, no motor disabilities, no learning disabilities; 4) learning disabilities and motor disabilities; 5) learning disabilities, behavioral difficulties, and motor disabilities; 6) behavioral difficulties and motor disabilities; 7) motor disabilities

tion. Therefore, many factors that arise from low socioeconomic status may bring about the appearance of MBD.

PROFILE OF THE CHILD WITH MBD

There are three major components of MBD: specific learning disability, behavioral difficulties, and motor disabilities (Figure 1). There is little question that behavioral difficulties are the most dominant presenting symptoms. The major behavioral complaints are: inappropriate activity, especially hyperactivity, short attention span, and impulsiveness. Retarded motor development and incoordination are typical examples of motor disabilities. Specific Learning Disability embraces many and varied types of disorders such as "pure" dyslexia (inability to read) and dysgraphia (inability to write legibly). As can be seen from Fig. 1, any one of the components can exist alone; but it is much more common for some overlapping to occur. For example, the hyperactive child usually has some specific learning disability as well.

Many authorities now include disordered language development as a fourth component in this characteristic triad. A young child with an abnormality of either expressive language (speech) or comprehensive language (understanding of speech) is at risk. It is in this group that one finds a significant number of children who have a hard time learning how to read, write, and do arithmetic.

The child who is hyperactive and destructive, who deprives the family of sleep and who is disrupting the classroom is often presented to the physician as being in need of urgent medical care. The hyperactivity can be of a continuous nature, but much more often it is intermittent and is

usually described best as inappropriate to the immediate situation. There may be intermittent episodes of spectacular overactivity. Hyperactivity in the form of movement can be gauged by the use of ingenious monitoring devices — self-winding watch mechanisms — that can be placed on the extremities. There are several interesting facets of hyperactivity. The degree of hyperactivity is no indication as to whether the cause is primarily physical, organic or psychologic.* The syndrome occurs in children with all levels of intelligence. Boys are more frequently affected than girls. The ratio is thought to be approximately 4:1. There is a predictable clinical course of hyperactivity. Hyperactivity often begins to improve between the ages of 8 to 10, and continued improvement takes place through the teens. However, the frequently associated cognitive and perceptual (or brain processing) difficulties usually persist. The explanation for the improvement is not known.

The basic underlying factor in the typical hyperactive child is an inability to pay attention, and it is out of this basic difficulty that the symptom complex arises. For this reason the condition is now being thought of more in terms of an *attentional disorders.***

This disorder has a group of *primary symptoms* which are:

1. Hyperactivity
2. Impulsivity
3. Excitability
4. Distractibility

The associated symptoms are:

1. Learning disorders
2. Anti social behavior
3. Low self-esteem and/or depression.

*See chapter 6 for an explanation of psychologic hyperactivity.

While they usually result from the primary symptoms, they may themselves be primary in nature. For example, learning disorders can result from distractibility or can be present innately.

Whether the child "grows out of it" or not will depend largely on the primary cause. If it is neuro-organic or genetic (inborn), it is less likely to be outgrown than if it is psychogenic in nature.

Hyperactivity causes problems in both formal education and the learning of techniques of interpersonal relationships. Both processes take place and are consolidated in the early years of life.

Often the child is first diagnosed at the time of school entrance. The history frequently reported by parents is that the child is active and restless in infancy, begins to walk and then escapes the confines of the playpen and strides forth to destroy the environment. As he grows older, he breaks into everything; and his activity consumes playthings and household objects alike.

The child often cannot sit for any reasonable period at the dinner table or in front of the television set. In school, he fidgets and cannot sit still in his seat. He walks about the classroom like a gossip columnist at a charity ball. He annoys his classmates, and drives his teacher to unspeakable fantasies. The child frequently has difficulty sleeping during infancy. Furthermore, he often appears to have need for less sleep than siblings as he grows older. He may also have hyperactivity of speech with a constant flow of rushing

**The new *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association will no longer contain the diagnosis, *Hyperactivity*. It will be replaced by *Attention Disorders*.

speech and a flight of ideas. Social pressure may or may not modify hyperactivity for short periods of time. Often the parents are distraught to find the child unusually well behaved when threatened by the one-to-one situation of the physician's office. The experienced physician understands this phenomenon and knows that parents' complaints should not be dismissed lightly.

Because of the impulsiveness usually associated with hyperactivity, the child may venture into very dangerous situations. He runs into traffic, and is a victim of accidental poisoning. He climbs into trees or other high places and falls, often because of associated awkwardness. He pushes arms and legs through glass windows. He may fight constantly during school. He is frequently the child who plays with matches or destroys property. As he grows older, he may steal, perform delinquent acts, indulge in sexual acting out and become truant. He may become a problem for the entire community.

Unless a mother or teacher actually has had the experience of managing a hyperactive child, a reasonable understanding of the problem may be impossible; but the above description should lessen the frustrations of the reader's initial and subsequent encounters.

EXTREME HYPERACTIVITY AND BIZARRE BEHAVIOR

The assumption that every child who is hyperactive merely has MBD will lead to grave errors. There is a group of children, few in number, who manifest grossly abnormal behavior and are also overactive; they exhibit purposeless activity which is often destructive, have little receptive or expressive language, and do not interact with children or adults through eye contact or speech. The behavior is so deviant and the destructive over-activity so intense they cannot participate in a school classroom for even a few moments.

Although there are a large number of possible underlying causes, those most prevalent include:

1. Mental retardation of moderately severe degree. Evaluation of retarded children will often reveal uneven mental abilities sometimes stretching into the normal range in narrow areas.

2. Hearing impairment with poor social adaptation and control. Since it is the condition most amenable to therapy, the presence of profound deafness should be excluded by sophisticated evaluation whenever feasible.

3. Severe communication difficulties — aphasia/dysphasia.

4. Infantile autism — this appears early in the first years of life and may or may not be associated with mental retardation.

Exact diagnosis is often extremely difficult. A multidisciplinary approach including the physician, psychologist, language specialist, audiologist and other appropriate professionals is usually necessary. A diagnostic classroom may be invaluable in establishing not only a diagnosis but also an approach to management. The children frequently benefit from a combination of behavior modification techniques, special education, language therapy, and medication.

It must be borne in mind that parents are reluctant to accept mental retardation as a final diagnosis and will accept virtually any substitute characterization of their child's difficulty. This human weakness often results in parents shopping from doctor to doctor or school to

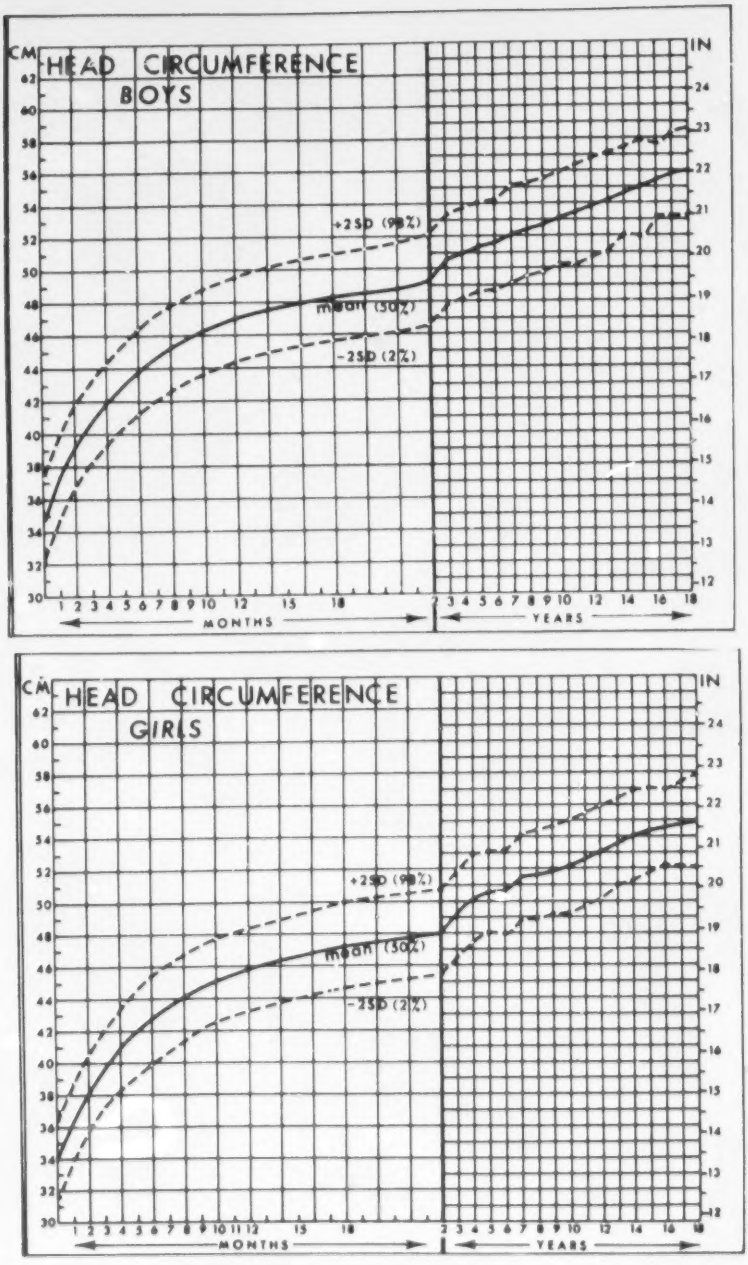

Figure 2
These charts of occipito-frontal circumference illustrate the normal range for boys and girls. (From Nellhaus, G.: Pediatrics 41: 106, 1968.)

school. This approach should be understood by school personnel and discouraged when possible.

NEUROLOGIC EXAMINATION

Because of the interrrelationships of the brain and other organ systems, the general physical examination which includes examination of the heart, lungs, abdomen, kidneys, and skin also must be done. Indeed, certain diseases of the brain are regularly associated with abnormalities of other organs — for example, cafe-au-lait skin spots in neurofibromatosis and depigmented skin spots in tuberous sclerosis are two examples of brain disease that also produce abnormalities in other areas.

Minor physical abnormalities are frequently found in hyperactive children, generally in the head, eyes, ears, mouth, hands and feet. The significance of these abnormalities is that they result from insults that occur early in pregnancy. They are not acquired during or after birth. The more severe the anomalies, the more likely that the associated hyperactivity is severe.

The head circumference should be measured in every child during the examination. The circumference of the head is a reasonable approximation of the size of the brain, and when compared to standard charts gives some idea of the rate of brain growth. Figure 2 depicts the ranges of normal and the mean. Deviations necessitate further investigation for cause. When the circumference is below two standard deviations, the likelihood that the child is mentally retarded is approximately 9 out of 10.

During the neurologic examination, the child's ability to attend and participate should be evaluated. Right-left orientation is also assessed and compared to normal age expectations of achievement.

Cranial nerves are contained completely within the brain and skull. They do not pass through the spinal cord to perform their function. Specific parts of the neurologic evaluation are directed at testing each of these nerves. More sophisticated examination obviously includes tests of hearing, vision, and speech production. Rapid movement of the tongue is controlled by a number of neural mechanisms. Difficulty with rapid movement of the tongue is a common finding in children with learning disabilities. The deep tendon reflexes are examined to determine whether they are present, whether they are symmetric, and whether they are overactive. A very brisk reflex may be abnormal and not an indicator of normal function. These reflexes are very simple responses to simple stimuli, usually elicited by stretching the tendon with the tap of the reflex hammer.

Testing of coordination is routinely performed. Fine motor skills are tested by movements of the hands and tongue. Larger motor skills are tested by having the child walk, run, and hop. Balance is tested by having the child walk a line and stand with both feet together. Coordination, both gross and fine, is often disturbed in MBD children.

Sensory examination is varied. An evaluation of the primary modalities of touch, pain, heat, cold, position sense, and vibration sense usually proves normal. Complex modalities such as two-point discrimination, judgement of texture, weight, and object identification is more frequently abnormal in children with MBD.

The information from the neurological examination is used to determine if there is organic dysfunc-

tion and which area of the nervous system is involved. Twenty-five to ninety-five percent of children with learning disabilities have abnormal neurologic examinations. It is likely that the lower figure is the result of examinations by relatively unskilled examiners. When possible, a specific medical diagnosis will be made and thereafter, treatment planned. There may be no other way of suspecting the presence of brain abnormality. At times, the neurological examination indicates a need for further laboratory studies such as blood lead levels, tests for anemia, and electroencephalograms.

EPILEPSY

The presence of seizure disorder (epilepsy) is among the diagnostic possibilities in children with MBD. The possibility that the child suffers from petit mal epilepsy or its variants, which are manifested by short lapses of unconsciousness and arrest of activity, can often only be determined by the use of electroencephalographic study. Most neurologists do not recommend anticonvulsant medicine in the absence of clinical seizures despite epileptiform activity on the electrocencephalogram. However, certain selected patients with specific electroencephalographic abnormalities may benefit from anticonvulsant medicine.

The child who has a significant electroencephalographic abnormality, no seizures, and who also has a chronic behavioral or learning problem, occasionally, but rarely, benefits from the use of anticonvulsant medication. It is obvious that such a child should have a careful evaluation by a pediatric neurologist or an equally-skilled physician to determine if a therapeutic trial of anticonvulsant medication is warranted.

APHASIA

Aphasia is a condition in which there is loss of comprehension and/or production of *spoken language*. Comprehension of written words or numbers, arithmetic, recognition of forms or faces, social relationships (eye contact) is usually normal. Incomplete or less severe degree of impairment is often called dysphasia. Patients who have difficulties with articulation because of poor motor control of tongue, jaw, mouth, and vocal cords do not have aphasia.

The left hemisphere of the brain — predominantly the posterior portion of the temporal lobe — is the dominant site for language function in virtually all individuals, including those who are left handed. All persons with aphasia have suffered some brain damage in this area. To define a patient as aphasic implies that prior to loss, the individual had normal or near-normal abilities.

A simple classification of aphasia includes expressive aphasia, receptive aphasia, and complete aphasia. Patients with expressive aphasia are unable to formulate speech and sustain speech fluency. They often have difficulty naming objects. They have no problems coordinating movement of the muscles that are usually used in producing speech, but they have impaired ability to construct proper language sequence and content. Patients with receptive aphasia have markedly decreased ability to process *spoken* language in a normal manner, so their *spoken* responses are inappropriate. Patients with complete aphasia have gross difficulties in both the expressive and receptive areas. Most patients have varying degrees of difficulties. Their conversation is distorted by a lack of understanding, the formulation of

inappropriate speech and a marked lack of fluency.

Only on rare occasions do children with learning disabilities have true aphasia, ie, after an episode of bona fide brain damage, examination shows that they have lost previously acquired language abilities. The term aphasia is best reserved for these children.

Developmental aphasia is a term that causes confusion because it is frequently used to describe children who have never developed normal speech. The disability is most likely due to lack of development of normal speech processing brain centers. There are many causes for abnormal speech development that are known and even more that are unknown. The developmental concept is sound, but it is best that the term aphasia not be linked with developmental dysfunction.

MANAGEMENT AND THERAPY

There is little question that hyperactivity and distractibility are target symptoms posing the greatest challenge because they seriously interfere with optimal function.

Any therapeutic approach must begin with a broad assessment of the child and the environment. Detailed information concerning the home and school, plus interrelationships between the child and peers is necessary. Inevitably, therapy and management will require two or more simultaneous approaches. Even if abnormal behavior is due to organic difficulty, those skilled in techniques of behavioral therapy must participate in management planning.

Physical or neuro-organic causes often lead to maladaptive behavior that feeds on and sustains itself. (Figure 3A, B, C). Attempts should be made to manage the child without drugs. Consultation with specialists in other disciplines may be needed to determine if environmental change will be sufficient to ameliorate the child's difficulties. Counseling for parents, special educational procedures designed to reduce external stimuli and help the child with perceptual (brain processing) shortcomings frequently are all necessary. Physicians must be supportive of the efforts of other specialists in other fields (education and psychology).

Drug therapy is designed to reduce hyperactivity, inattentiveness, and impulsivity. There is no evidence that the commonly-used drugs specifically increase the efficiency of the brain. However, they improve learning capabilities through increasing attention span and reducing extraneous activity. It is noteworthy that many behavioral and educational approaches fail because of the child's basic distractibility and hyperactivity.

When it is deemed appropriate that drug therapy be instituted, an optimal dosage and administration time is usually determined by a trial-and-error method. Often the dose necessary for optimal benefit is less than that ordinarily recommended. Because these drugs are potent and all potent drugs have side-effects, the child must be closely monitored. Some undesirable side effects are an *increase* in activity with decreased appetite and, rarely, blood pressure elevation. When the phenothiazines are used (eg, Mellaril), problems of blood formation and liver function may occur. Table 2 lists commonly-used drugs for children with hyperactivity. There is no blood test or clinical examination that can help the physician decide when optimum drug dosage has been reached. The dose necessary is determined by the changes in learning and behavior. It

Figure 3A

MBD Interaction

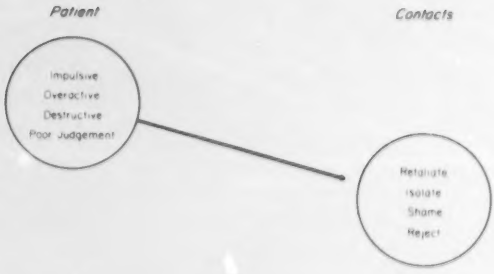

Figure 3A, B, C

These sequential diagrams demonstrate the initial effect that the MBD child has on others (3A), then the response of other individuals to the MBD child (3B), and finally the emergence of self-sustaining loop which facilitates continuation of the maladaptive behavior (3C).

Figure 3B

MBD Interaction

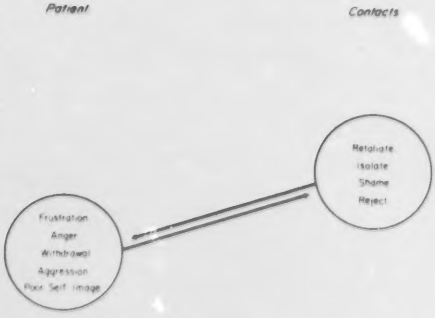

Figure 3C

MBD Interaction

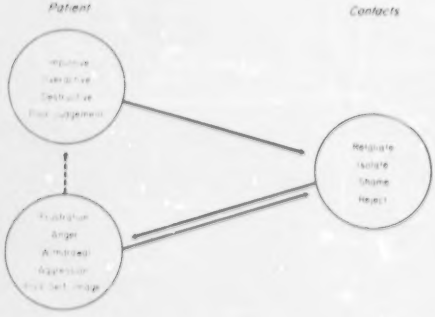

TABLE 2
Selected Medications Useful for MBD Patients

Medication	Daily dosage (average range)	Important side effects
Dextroamphetamine (Dexedrine)	5-20 mg (0.2-0.5 mg/kg)	Depression, appetite loss
Methylphenidate (Ritalin)	5-40 mg (0.3-1.0 mg/kg)	Depression, appetite loss
Pemoline (Cylert)	18.75-112.5 mg	Insomnia, initial appetite, loss, rash
Thioridizine (Mellaril)	20-60 mg (o.5-1.0 mg/kg)	Drowsiness, abnormal movements (dystonia), jaundice, decreased white count, rash

is for this reason that cooperation is necessary between parents, school, and physician if proper drug dosage is to be determined.

The sweeping condemnation by some individuals of all use of drugs is as irrational as the advocacy of drug use for every child. Drugs will become more and more a part of therapy for children and adults with learning and memory problems. The memory system is almost assuredly a biochemical one. Even now, exciting discoveries suggest that portions of the ACTH molecule enhance learning capabilities in animals and humans. If the future mirrors the past, then it is almost inevitable that drugs with greater potential for benefit will be found and utilized. On the other hand, they will never replace the need for good parenting, good behavioral therapy, and a proper educational approach.

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